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Nassau-Suffolk Regional Planning Board.

COASTAL ZONE
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ANALYSIS AND DEVELOPMENT OF GUIDELINES
FOR THE INTEGRATION OF
COMPREHENSIVE PLANNING AND COASTAL MANAGEMENT

Task 1

Detailed Work Program

Contract H-2050R

US Department of Commerce
NOAA Coastal Services Center Library
2234 South Hobson Avenue
Charleston, SC 29405-2413

Dr. Lee E. Koppelman
Project Director

August 20, 1973

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Nassau-Suffolk Regional Planning Board



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Letter of Transmittal
August 20, 1973

Dr. Arthur J. Zeizel
Research and Technology
HUD, Room 4212
451 7th Street, S.W.
Washington, D.C. 20410

Re: Contract H-2050R

Dear Dr. Zeizel:

In accordance with the stipulation of the above mentioned contract I am submitting for your consideration Task 1, the work program design.

I wish to acknowledge the value of your meeting with us on August 10th. Your comments and responses to our proposed course of action were extremely helpful.

As you well recognize, the contract was obviously optimistic in its assumption that Task 1 could have been completed in rigorous fashion within a thirty-day time period. Nevertheless, I do not consider the additional time ill spent since it has forced a detailed insight into the program at the very onset.

I look forward to your response in the near future.

Very truly yours,

Lee E. Koppelman
Executive Director

LEK:cb

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INTRODUCTION

Throughout the world, people are crowding into a narrow strand near the juncture of land and sea. Most of the world's great cities are near the sea. Nearly 70% of the world's population lives within easy access of the sea, and many of the remainder live near the lower reaches of rivers which empty into the sea or estuaries. Near the sea we find the greatest competition for limited resources and limited space. Land development, urban development, energy, recreation, waste disposal, conservation interests, commerce and navigation, national security, and a myriad of other interests compete in this narrow strand. The space available in the coastal zone for these activities is rare in comparison to the total land mass, and the resources there are often very fragile.

The Bureau of the Census estimated that in 1970 about 106,000,000 people, 53% of the United States' population, lived in the cities and counties lying within 50 miles of the oceans, Gulf of Mexico, and Great Lakes. "Some estimates project that by the year 2000, 80 per cent of our population may live in that same area, perhaps 225,000,000 people," reported the Senate Committee on Commerce in 1972. One of the heaviest concentrations of people in the United States coastal zone is found in the New York metropolitan region, where over 17.9 million people live and work. It is estimated that between 1970 and 1985 an additional 6 million people will inhabit the New York metropolitan region, making suburbs of as much land in the coming twenty-five years as were made in the preceding 300 years.

Without question the coastal zone is under intense pressure. Urbanizing coastal areas of the United States, such as Nassau and Suffolk Counties, are confronted with a triad of planning concerns that require

urgent attention in the face of such pressure. The triad consists basically of: (1) planning for urban and surrounding metropolitan communities; (2) planning for outlying rural areas and their interactions with metropolitan areas; and (3) planning for the adjacent marine environment. Typically, planning has dealt with the first two elements of the triad, but has omitted the marine environment and its interaction with adjacent land uses. Truly comprehensive planning for the management of coastal areas requires the blending of the three elements.

In recent years national attention has been drawn to the problems of management of the coastal zone. The recently enacted Coastal Zone Management Act of 1972 is a beginning effort in this direction. If enacted, the pending national land use policy legislation would bring additional attention to the coastal zone and land use management.

Federal programs have also called attention to specific coastal zone problems. Notable among these are HUD's Urban Planning Assistance Program (the 701 Program) and its flood insurance program; NOAA's Sea Grant program and its new marine eco-systems analysis (MESA) program; EPA's efforts to combat air and water pollution and hazardous substances; the Department of the Interior's regulation of the development of the resources of the outer continental shelf; the Coast Guard's efforts to combat oil spills; the Corps of Engineers' work in navigation improvements, beach erosion control, and wetlands.

States, also, have moved to improve management in the coastal zone. Led by Massachusetts, many coastal states have enacted wetlands management statutes: New York has one of the most recently enacted statutes of this sort. Increasingly the focus of Federal coastal zone

and land use management legislation places new emphasis on the role of coastal State governments to assume expanded authority in both planning and management.

Nassau and Suffolk Counties contain all three of the elements of the planning triad mentioned before -- from the heavily urbanized westernmost reaches of Nassau County, through the rapidly suburbanizing middle part of the Island, to the rural agricultural concerns of eastern Suffolk County, all of which are surrounded and influenced by the marine environment. The Counties are a microcosm of the coastal zone of the United States, a political laboratory experiencing most of the conflicts resulting from growing demand for the limited supply of valuable coastal resources. Their population of 2.5 million people has grown ten-fold in the last half century. Projections to the year 2000 estimate another 1.5 million people, with heavy growth particularly in Suffolk County. Even the easternmost rural reaches of Suffolk County are undergoing urbanization. That process is evidenced directly by changes in land uses and increased population, and indirectly by industrial and utility sites (such as nuclear power generating facilities) required to service urban communities. Bounded on the north by Long Island Sound, and on the south by the Atlantic Ocean, the Counties' marine edge includes long reaches of beach, some of which are among the most severely eroding beaches anywhere in the United States, high bluffs also afflicted by erosion, and valuable coastal wetlands.

In response to the mounting pressures, the Nassau-Suffolk Regional Planning Board was formed in 1965 to develop an overall plan for the use of the resources in the two counties. Among its principal accomplishments to date has been the development of the Nassau-Suffolk Comprehensive

Development Plan. Backed by 30 staff and consultant studies, and financed with HUD 701 Program support, the Plan emphasizes certain land uses, such as transportation, housing, recreation, industry, commerce, and education. In doing so, the Board gave priority to four broadly stated goals of the Plan: (1) to direct the pattern of development and the rate of growth; (2) to provide adequate housing and jobs linked by a balanced transportation system; (3) to eliminate deterioration and obsolescence; and (4) to preserve open space and the natural environment.

Special planning problems were posed by the coastal location and marine environment of the region. Among its first steps in 1965 the Regional Planning Board established an Oceanographic Committee to study the opportunities and problems growing out of the impact of population expansion on the marine environment of the two counties. The Committee's report, "The Status and Potential of the Marine Environment" in December 1966 documented the present value and future economic potential of the marine resources of Long Island. It concluded that if Long Island were to grow as a desirable and attractive place in which to work and live, the trend towards deterioration of the estuarine and shore environment had to be reversed. Activities such as dredging, land fill, and pollution by human, industrial, and agricultural wastes created marine environmental management problems requiring solution to ensure proper development in the counties. Moreover, the report showed that greater knowledge of the marine environment than existed was required in order to make management decisions to solve those problems.

On recommendation of the Oceanographic Committee, the Regional Planning Board created as its sole committee the Regional Marine Resources Council to pursue a research program to obtain necessary marine environ-

mental knowledge and to transfer it in useful form to managers and administrators; and, further, to advise the Board in all matters having a significant impact upon the marine environment of the region. Membership on the Council is divided among voting and advisory members. The voting members are broadly representative of the academic, commercial, environmental, and industrial sectors of the two counties. Advisory members are drawn from Federal, State, and local governmental agencies which have a direct interest in the management and supervision of the marine environment.

In 1967 the Regional Marine Resources Council began a program to identify the knowledge required and to develop a procedure for using that knowledge for effective planning and management of Long Island's marine resources. After extensive search, the Travelers Research Corporation (now The Center for the Environment and Man, Inc. (CEM) of Hartford, Connecticut was selected to provide the environmental research and systems analysis needed to complete the task. In addition to structuring the research program into a series of functional steps, and providing a framework for classifying problems, Travelers also identified seventeen marine related problems of major concern to Long Island. From that list four subject areas -- groundwater and waste water disposal, dredging and dredge spoil disposal, coastal protection, and wetlands -- were singled out for intensive treatment. A total of fourteen research reports were prepared by Travelers and its successor, CEM, including recommended management guidelines, and priority-ranked research needs.¹

¹For a list of the publications prepared under Regional Planning Board and Marine Resources Council auspices, see the annotated bibliography in the Appendix of this document.

This work was supported by the National Sea Grant Program.

After careful review of the research reports and considerable modification of the marine environmental management guidelines, the Regional Marine Resources Council adopted guidelines, and recommended them to the Regional Planning Board in the Spring of 1973. The guidelines both stand alone and interact strongly with each other in the four areas previously mentioned -- groundwater, dredging, coastal protection, and wetlands. Adopted in the early summer by the Regional Planning Board, they are in press and shortly will be available for distribution.

While the studies leading to the marine environmental management guidelines were being performed, the Marine Resources Council pursued an active program to keep itself abreast of the latest knowledge on matters before it. Of particular interest and value were a succession of briefings led by Federal agencies. These included briefings by the Environmental Protection Agency on waste water treatment and disposal, during which the U. S. Geological Survey addressed problems of groundwater management and the Corps spoke about groundwater recharge. The National Oceanic & Atmospheric Administration of the Department of Commerce briefed the Council on wetlands management; the Corps of Engineers combined briefings on dredging and dredge spoil disposal, followed by beach erosion and coast stabilization; and the U. S. Coast Guard has twice given briefings on oil spill prevention and advances in oil cleanup technology.

As part of its continuing program, the Council is currently looking at the effects of potential oil and gas production on the outer continental shelf near Long Island, while also pursuing a study of the management problems of the hard shell clam industry, New York's foremost fishery.

In addition, the Council will play a vital role in providing critiques and guidance on the integration of coastal zone management into the Nassau-Suffolk comprehensive development plan.

It is upon this base of scientific knowledge developed over an eight-year period by the Regional Marine Resources Council, and the extensive planning information supporting the adopted comprehensive development plan for Nassau and Suffolk Counties that this research project will build. Its goal is to link the processes of regional planning and coastal zone management. Its specific objectives are to:

1. determine the impact of the comprehensive development plan on the coastal zone of the two counties, and, conversely, the influence of the marine environment on the land uses or functional components of the Plan.
2. identify and recommend modifications to the Plan based on the environmental impact determinations,
3. recommend processes and institutional structures for implementing the modified plan based on environmental impact assessment and consideration of social, political, and economic factors present in the region.
4. evaluate the Nassau-Suffolk experience for transferability to other coastal regions of the country.
5. prepare a report and handbook of guidelines for the integration of comprehensive planning and coastal zone management to assist planners and decision makers in other areas.

To accomplish these objectives, the study has been divided into nine tasks, the first of which is to prepare this detailed work program.

In general, tasks 2 - 4 analyze the scientific aspects of the program; tasks 5 and 6 relate to the economic, political, and institutional aspects; task 7 synthesizes the "hard" and "soft" sciences into proposed modifications of the Plan; task 8 assesses the transferability of the Nassau-Suffolk experience; and task 9 is the final report and guidelines. More specifically:

Task 2 identifies the components of the Plan to be analyzed; analyzes interactions or impacts using the products left over by man's land uses and activities as a means of determining impacts, where possible; and creates an inventory for analyzing the interrelated land use - activities - waste products relationships.

Task 3 will extend the analyses begun in Task 2 by analyzing the land use - activities - waste products relationships of each component of the Plan against all other components of the Plan.

Task 4 culminates the "hard science" analyses of the study by identifying areas of the Plan where coastal zone environmental impacts are likely, and by proposing Plan modifications which show where the Plan could be more compatible with or beneficial to the coastal zone.

Task 5 begins the economic and political analyses, testing the economic, political, and social acceptability of the identified technical alternatives for modifying the Plan.

Task 6 requires analysis of administrative and institutional structures to carry out the Plan as it might be modified.

Task 7 is the synthesis of the foregoing tasks, in which choices are made for modifying the Plan.

Task 8 calls for an assessment whether the technical, institutional and other elements of the Plan, that the planning process the Board has gone through, can be transferred to other parts of the country.

Task 9 documents the planning process, and provides a handbook of guidelines and procedures for integrating comprehensive planning and coastal zone management.

Many of the tasks will run concurrently, some sequentially. All of them have internal checkpoints at which the materials being developed will be checked for relevance to real management problems and for interaction with other tasks. Periodic reviews will be conducted with HUD, with the Regional Marine Resources Council, with the Federal Project Advisory Committee, and other groups that may be formed if further critiques are useful to complete the work.

To the best of our knowledge, no other region of the country has the same degree of planning experience, scientific information, and implementation of plans and guidelines into management action as do Nassau and Suffolk Counties. When the study is completed a significant contribution advancing the arts of comprehensive planning and coastal zone management should have been made. If so, the products and processes of the Nassau-Suffolk Regional Planning Board will benefit community planners and decision makers in coastal areas throughout the country.

This document identifies the objectives, methodology, skills required, levels of effort, anticipated findings, and products for each of the tasks mentioned above. In addition, the relationships between tasks in terms of timing and substance are summarized graphically by flow charts. The document also contains a set of appendices to cover related matter that may

be of interest to readers not familiar with the Nassau-Suffolk region, or some of the methodological approaches included in this program.

Within each task we have identified milestones, level of effort, and skills required to complete the task. In addition, we intend to use the following review procedures during the two-year work program; internally we shall make monthly reports to the Regional Marine Resources Council on our findings and progress to date. As we complete tasks, sub-tasks or other milestones, we shall make presentations both to the Council and to the Regional Planning Board. Externally we shall submit completed tasks, subtasks and other milestone efforts to the Government Technical Representative for review and comment, as well as giving frequent progress reports. Other reviews within the Federal Government may be forthcoming, but arrangements have not been completed for them as yet. Moreover, we shall consider open public seminars both to inform the public and to receive a broad array of public information and reaction.

Several other areas of the nation have carried out planning and applied research efforts to varying degrees. One of the most notable is the ongoing effort being conducted by the Department of Housing and Urban Development and the U. S. Geological Survey in cooperation with the Association of Bay Area Governments in San Francisco. The prime landmark contribution in that effort has been the development of highly rigorous earth science information and its relationship to the planning process.

The effort undertaken in this project is an attempt to build upon a strong experience of comprehensive planning and implementation coupled to applied scientific data for the purpose of developing guidelines, standards, and criteria for sound ecological planning of the coastal zone.

LEVELS OF EFFORT (Man Days)

TASK*	1	2	3	4	5	6	7	8	9	TOTAL
Professional Skills or Disciplines Required										
Administration	15	30	20	25	10	30	20	40	25	215
Comprehensive Planning	35	40	20	45	100	120	50	100	75	585
Computer Analysis	--	--	--	--	20	--	--	--	--	20
Economics	20	--	10	10	150	10	15	10	10	235
Engineering	--	90	25	60	30	10	25	5	--	245
Environmental Planning	25	90	40	60	10	10	25	20	50	330
Hydrology	--	30	15	40	--	--	--	--	--	85
Law	10	25	--	--	35	45	10	40	50	215
Marine Science	5	135	--	70	--	10	40	10	--	290
Political Science	15	--	--	--	110	100	15	10	10	260
Public Health	--	20	10	30	--	--	--	--	--	60
Sociology	15	--	--	--	40	10	15	10	10	100
Systems Analysis	5	60	120	49	--	--	--	--	--	225
Welfare Economics	--	--	--	--	30	--	--	--	--	30

<u>Other Skills</u>	1	2	3	4	5	6	7	8	9	Total
Clerical	30	55	25	75	175	125	100	125	200	910
Drafting	10	--	15	35	20	20	95	--	100	295
Key Punch	--	25	5	--	5	--	--	--	--	35
Planning Aide	--	50	10	25	100	25	10	100	100	420
Total	185	650	335	515	855	505	420	470	630	4,555

* See following page for description of tasks.

TASK 2

STATEMENT OF TASK

The contractor shall identify specific interrelationships between functional components of the Plan and the coastal marine environment. Analysis shall determine (quantitatively where possible) the environmental conditions necessary for Plan proposed land uses and activities; and an assessment of direct and secondary environmental impacts of each Plan functional component, i.e., transportation - land resources - accessibility. Data specific to the various geographic areas of Long Island will be used to determine the significant relationships and impacts of each particular functional component.

OBJECTIVES

- 1) to apply existing scientific knowledge to those land uses and activities described or implied in the Plan that must be analyzed to determine their interactions and estimated impacts on the coastal zone;
- 2) to identify outputs and/or by-products of activities and the consequences of their impact on the coastal zone;
- 3) to determine those environmental conditions required for the attainment of plan objectives using existing data specific to the various geographical areas of Long Island;
- 4) to develop criteria for determining the significance of specific land uses and activities as well as identified technical outputs and by-products resulting from the activities implied in the Plan; and
- 5) to assign levels of acceptable tolerance to the significant technical outputs and by-products.

96 LU categories
3 digit SIC classification

The work in Task 2 centers on six questions which must be answered if the foregoing objectives of the Task are to be achieved. The answers to these questions are to be viewed explicitly as they relate to the coastal zone.

- 1) What land uses and resultant kinds and levels of activity does the Plan imply?
- 2) What technical by-products with potential environmental impacts are to be expected from these land uses and activities?
- 3) What kinds of non-technical changes in the environment may be expected as a result of these land uses and activities?
- 4) What are the acceptable limits of environmental damage resulting from these land uses and activities?
- 5) What are the environmental requirements of each of the land use types and their related kinds and levels of activity?
- 6) What are and how shall we choose the criteria to designate important changes?

KNOWLEDGE BASE

Since the completion of the Plan, there have been advances in scientific knowledge and increased concern regarding the effects of man's activities on the environment. As stated in the introduction to this report, many of these advances and concerns center on the relation to coastal environments. In conformance with these advances, a rigorous review and updating of the Plan is being undertaken.

Actions at Federal, State and local levels provide ample evidence of the attention being given to environmental planning. The National Environmental Policy Act of 1970, has made it essential for planning agencies to introduce environmental considerations into the planning process. Actions at the State and local level, i.e., recently

passed New York State wetlands legislation, and the creation of the Commission on Environmental Quality by Article I of the Suffolk County Charter, have also established mechanisms for determining environmental impact assessments of local public projects, and in some instances, for private development programs through regulatory permit systems. Environmental impact statements for specific projects often cite regional development plans as being in compliance with, or justification for the projects. Yet the land use plans, transportation plans, housing plans, utility plans, etc., that are parts of the broader comprehensive development plan can individually and collectively trigger changes in coastal uses and resources. These changes, if known and taken into consideration, may cause the region to alter its comprehensive development plan. Thus, effective environmental management must include not only the investigation of individual plans and projects, but also analysis of how they interface with other activities in the region.

The Nassau-Suffolk Regional Planning Board (NSRPB) will attempt to integrate coastal zone management considerations into the comprehensive planning process. The extensive planning information already assembled by the NSRPB will be used in conjunction with the scientific expertise and knowledge developed during the last seven years by the Regional Marine Resources Council (MRC). During this period the MRC has held over 100 regular and special meetings, and has received over 60 briefings from various levels of government, industry, the academic/scientific community and citizens groups on environmental problems involving Long Island's coastal zone. Sponsored studies by the Marine Sciences Research Center, Stony Brook, the Adelphi Institute of Marine Science, Garden City, the Center for the Environment

and Mar. Inc., Hartford, and the New York Ocean Science Laboratory, Montauk, as well as seminars co-sponsored with NOAA, the Office of the Chief of Engineers, U.S. Army Corps of Engineers, EPA, and USGS and others have already indentified problem areas in the coastal zone and summarized the state of knowledge regarding the immediate effects of various activities particularly in the fields of dredging/dredge spoil disposal, wastewater treatment, coast stablization/protection and wetlands management. The MRC report, Guidelines for Long Island Coastal Management, has established management guidelines for these four areas, as well as research priorities to aid local decision making in terms of fiscal appropriations and policy formulation. Ongoing MRC studies in other areas, such as shellfish cultivation, oil spill prevention and cleanup technology, and the potential implications of offshore continental shelf petroleum development on Long Island will provide an additional knowledge base incorporated in the analysis to determine the effect of existing or proposed land uses and activities on the marine environment.

RELATION OF THIS TASK TO OTHER TASKS

This Task supplies the scientific background which will permit an analysis of the land uses and activity levels implied or described in the Plan, their interrelationships, possible environmental impacts, as well as the selection of technically feasible alternatives. Initial data collection and screening will permit the Task 3 analysis effort to begin approximately one month after the start of Task 2. It is anticipated that results of these analyses will be available for use in Task 4, approximately six months after the start of Task 2.

GENERAL METHODOLOGY

Probable environmental consequences of the activities and land uses described or implied in the Plan will be identified through the application of general and specific cause-effect relationships as developed in the earlier MRC-CEM research project. This methodology, in combination with specific scientific and engineering expertise, will identify the type and magnitude of potential coastal zone impacts associated with the major elements of the Plan. These effects will be identified by separating the mass of land uses and related activities described in the Plan into individual and specific types or classes of land use and activities that relate to the coastal zone. Task 2 will identify and isolate those land uses and activities described and/or implied in the Plan and will establish through cause-effect analysis, the specific environmental implications of each type or class of land use and activity. The identification of these potential environmental effects will draw on the knowledge base assembled in work done by/for the MRC and NSRPB relating to coastal environments. The methodology entails the use of scientific, engineering, and planning expertise to identify specific cause-effect relationships, and their probable impact and tolerable limits.

WORK PLAN

WORK ELEMENT 1

A. Objective

The objective is to identify the different types of land use and kinds of activity implied by the Plan that will generate technical outputs and changes impacting the coastal zone.

Many of the land uses and activities implied in the Plan will generate specific kinds of technical outputs and/or by-products that are capable of affecting the coastal zone. It is neces-

sary to identify the different types of land uses and their related activities so that a subsequent determination can be made of technical outputs and changes generated by each type. In this determination, it may be necessary to refine the land use classification system of the Plan and to examine its relationship to the consequences of the kinds of expressed activities. The general relationship between use, activity and probable consequence or output is an important point of analysis in determining effects on the coastal zone. A small boat marina, for example, will generate by-products in terms of spilled oil, unburned fuel, poisonous anti-fouling paints, human wastes, etc., that may have a damaging effect on existing marine life. Or, the assignment of land uses to agriculture may imply the generation of residuals from those persistent chlorinated hydrocarbon insecticides and those nutrients found in commercial fertilizers that reach the marine environment by runoff and infiltration. The assignment of land to residential use at low, medium or high density implies different levels of wastewater loadings which may ultimately affect marine waters. Power generation activities may produce a thermal load in coastal waters which may affect marine life and/or water quality.

B. Methodology

Planners, environmental scientists and engineers will examine the Plan and all supporting documents to determine the environmental implications of the types of land uses and their probable activity mixes. Maximum use will be made of the comprehensive planning studies and other literature produced by the NSRPB and the MRC, including the Existing Land Use, the Utilities Inventory & Analysis, and the Transportation volumes of the Comprehensive Plan Series, and

such technical data as the Characteristics and Environmental Quality of Six North Shore Bays, Nassau and Suffolk Counties, Long Island, New York, the Proceedings of the Seminar on Advanced Wastewater Treatment and Disposal (MRC-EPA-USGS), and the Proceedings of the Seminar on Dredging/Dredge Spoil Disposal and Coast Stabilization/Protection (MRC-U.S. Army COE).

C. Findings

A statement of the relation between Plan land uses with their implied activities and the types of output they may generate.

D. Product

A working paper detailing the land uses and activity types described or implied in the Plan and their probable outputs.

WORK ELEMENT 2

A. Objective

The objective is to identify the technical by-products that will result from the land uses and activities described or implied in the Plan.

The specific technical by-products generated as a result of land uses and related activities must be identified. For example, wastewater disposal will generate BOD and coliform loads, and industrial processes may generate chemical by-products in the form of acids, heavy metals, solvents, etc.

B. Methodology

Based on the land uses and activities identified in Work Element 1, environmental scientists will conduct a detailed review of technical handbooks and scientific literature relating to processes and activities, to determine the types of technical by-products expected. This will include studies and seminars held by/for the NSRPB and the MRC,

such as the Proceedings of the Seminar on Advanced Wastewater Treatment and Disposal (MRC-EPA-USGS), and the Proceedings of the Seminar on Dredging/Dredge Spoil Disposal and Coast Stabilization/Protection.

C. Findings

The technical by-products generated by each land use and activity type will be identified.

D. Product

A report detailing these findings and their relevance for the coastal zone.

WORK ELEMENT 3

A. Objective

The objective is to identify those consequences of land use and activities implied in the Plan that can generally be expected to impact the coastal zone, apart from the effects of specific and identifiable technical outputs or by-products. Recreational use of the coastal zone at the level implied in the Plan may, for example, result in non-sustainable loads on fragile ecological systems and landforms, i.e., the possible increase in erosion rates on a barrier beach due to the destruction of dune grasses, the interruption of dynamic shore processes, and the destruction of wetland fringes on the landward side of the beach.

Residential housing located near the edge of bluffs may cause increased erosion rates by altering runoff patterns and by destruction of vegetation on the edge and face of a bluff. Industrial facilities should not be located adjacent to fragile ecologic environments, such as marine wetlands and unique biologic communities, or those environments which act to restore or pre-

serve natural resources, such as important groundwater recharge areas.

B. Methodology

Planners and environmental scientists will conduct a detailed review of the Plan and supporting documents to determine the probable consequences of those land uses and activities described and/or implied. Environmental standards for land uses and activities will be determined from scientific studies and papers, with maximum use being made of those documents and studies by/for the NSRPB and MRC, including but not limited to the Erosion of the North Shore of Long Island, The Marine Wetlands of Nassau and Suffolk Counties ... New York - 1972, and An Assessment of the Water Quality Characteristics of Great South Bay and Contiguous Streams.

C. Findings

The identification of probable environmental consequences of land uses and activities described or implied in the Plan.

D. Product

Working paper detailing the probable consequences of land uses and activities described or implied in the Plan as they impact the coastal zone.

WORK ELEMENT 4

A. Objective

The objective is to identify the acceptable limits of those technical by-products that may impact the coastal zone.

When the by-products of activities implied in the Plan are specified, it will be necessary to establish acceptable limits for each type or class of output beyond which environmental damage or public health problems may arise. Residential wastewater, for example,

will contain BOD and coliforms, and it is necessary to establish acceptable levels for each. Similarly, the tolerable thermal loads from power plant operations must be established.

B. Methodology

Acceptable limits of by-products will be identified through a literature search, which will include public health data, statistical studies, scientific papers, and statutory and regulatory limits. Maximum use will be made of the literature developed specifically for the MRC, in particular, such items as Quality Standards for Coastal Waters of Long Island, New York, CEM-4047-408

C. Findings

The identification of tolerable, safe, or accepted levels of technical by-products can be made for most of the major classes of activities described or implied in the Plan.

D. Product

A compendium of technical by-products and their established limits will be produced for internal use in Tasks 2 and 3.

WORK ELEMENT 5

A. Objective

The objective is to determine the specific environmental conditions required for classes of land use and activities that can be expected to take place in the coastal zone. The shellfish industry, for example, requires the maintenance of specific water quality. Other uses, which imply a lessening of this water quality should be located where their effects on shellfish will be minimal.

With regard to the water quality standards required for near-shore activities, recreational uses require specific water quality, while marine transportation can take place in grossly polluted waters.

B. Methodology

Environmental scientists and planners will determine the environmental conditions required for various types of land uses and activities. This effort will draw as much as possible on previous work conducted by/for the NSRPB and MRC, including, but not limited to, Integrated Water Supply and Waste Water Disposal on Long Island, Fourteen Selected Marine Resources Problems of Long Island, New York, Descriptive Evaluations, and the Development of a Procedure and Knowledge Requirements for Marine Resources Planning.

C. Findings

Anticipated findings will consist of the identification of environmental conditions needed for the various land use-activity areas in the Plan, with a preliminary or first-run assessment of those areas in the Plan which conflict with these requirements, such as, houses on flood plains.

D. Product

A summary report detailing the general environmental conditions required by, or for, the land uses and activities described or implied in the Plan, and those elements in the Plan that are in conflict with these conditions.

WORK ELEMENT 6

A. Objective

The objective is to develop selection criteria to determine the significance of the various identified outputs, conditions and effects as they can generally be expected to impact the coastal zone.

It is expected that the activities and land uses identified in the Plan will give rise to a large number of by-products and

environmental impacts. It is necessary to develop selection criteria which can reduce the large number of potential cases to manageable proportions. These criteria will enable planners to differentiate between those environmental impacts which are of sufficient importance to warrant a change in the land use, activity level, or technology implied in the Plan.

B. Methodology

Scientific and "best judgment" criteria have been developed in work sponsored by NSRPB and MRC, such as, Guidelines for Long Island Coastal Management, Dredging and Spoil Activities in Nassau and Suffolk Counties, Long Island, New York and Preliminary Considerations in Estuarine Monitoring Around Long Island. Environmental scientists and planners will use this information, as well as other literature to identify those impacts which are of major importance.

C. Findings

The large number of potential environmental effects will be reduced to more manageable proportions through the application of selected criteria.

The selection criteria will serve as a major basis for identifying the more important coastal zone consequences of Plan land uses and activities.

D. Product

A working paper detailing the general application of selection criteria to each major class of land use and activity with examples of the application of the selection criteria to specific activities and land uses described or implied in the Plan.

FINAL PRODUCT

Findings of Task 2 will be incorporated into Final Products described in Task 3.

Disciplines or Skills
Required

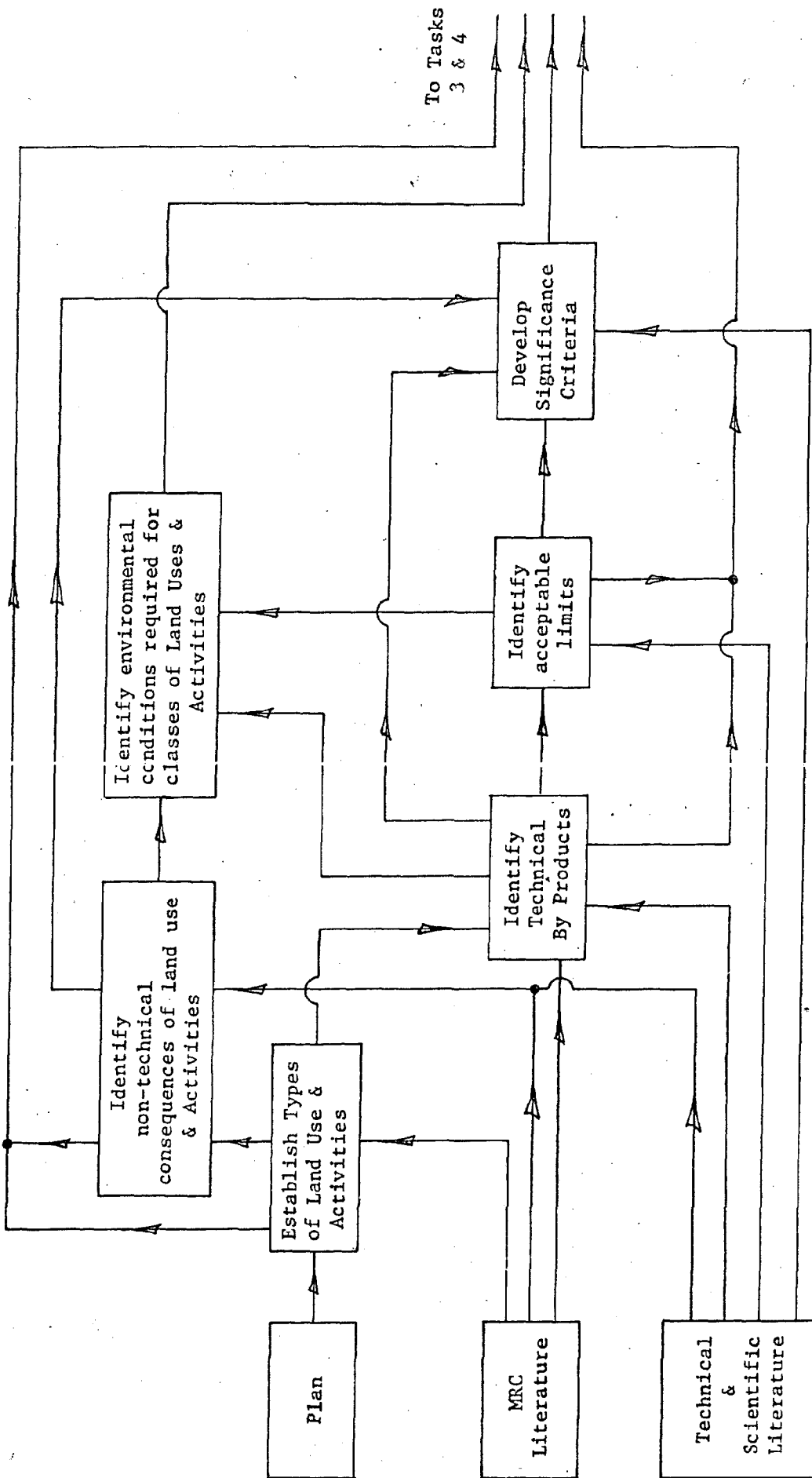
Level of Effort

Professional

Administration	30
Comprehensive Planning	40
Engineering	90
Environmental Planning	90
Hydrology	30
Law	25
Marine Science	135
Public Health	20
Systems Analysis	60
Total	520

Support Skills

Clerical	55
Key Punch	25
Planning Aide	50
Total	130
Task 2 Total	650



Task 2

TASK 3

STATEMENT OF TASK

The contractor shall establish a set of procedures for analyzing the probable environmental effects of the various land use and activity combinations described or implied in the Plan as they pertain to the coastal zone of Long Island. These procedures will be used to analyze and evaluate the interrelationships of specific land use activities and their environmental consequences relative to the coastal zone.

OBJECTIVES

To formulate, establish, and validate a set of procedures (a model) for systematically relating specific land uses and activities, singly and/or in combination, to probable environmental changes in the coastal zone. While the Task 2 data input to the model will, in this case, come from data specific to the Nassau-Suffolk region, its framework is intended to be applicable to any coastal region.

KNOWLEDGE BASE

A number of environmental models or frameworks have been formulated over the past several years as aids to the decision-making process. Some start with a set of well defined environmental objectives which are then used to develop and recommend specific governmental actions for attaining these objectives. Other models are less complex and are designed to provide insights and general guidelines to bring about a more orderly change in the physical makeup of the region. This latter approach is emphasized, because it has a greater potential for yielding implementable results in a shorter time period.

Cause-effect relationships between land-use activities and resultant physical changes to the environment are extremely complex and can be conceptualized in a number of ways - as a network, or as a series of

interconnected feedback loops. Scientific knowledge of the complex chain of environmental consequences proceeding from various land use activities is incomplete. Scientists know more about the direct by-products from activities at the point where they are generated. They are less precise when predicting the transport and diffusion of these by-products. Moreover, scientific knowledge is relatively crude when it comes to specifying the physical damage or impacts resulting from the presence of these by-products in the biosphere. Thus, in the face of this uncertainty, there is a need to formulate a practical decision-tool having maximum utility to the land use planner.

Therefore, this Task will take an iterative approach to the problem and will proceed in a set of increasingly more complex steps. The approach makes maximum use of existing scientific investigations and studies, e.g., Resources for the Future, the Center for the Environment and Man, Inc., and the consultant firms for the Regional Marine Resources Council of the Nassau-Suffolk Regional Planning Board. Those environmental areas where specific scientific knowledge and data is most complete will be stressed.

RELATION OF THIS TASK TO OTHER TASKS

This Task establishes a procedure by which the large amounts of data and information developed in Task 2 can be ordered, classified and combined to facilitate the analysis and selection of Plan alternatives in Task 4. Initiation of Task 3 will occur one month after the start of Task 2, so as to allow the collection of relevant data in a form suitable for subsequent analysis.

GENERAL METHODOLOGY

Task 2 is generally concerned with identification - it does not entail any analysis. Therefore, the starting point of the analysis tasks will establish a classification scheme for different land use activities. The first, or primary set, might consist of land uses, e.g., housing developments, commercial areas, and industrial sites. A second set could include those activities which result from, or are constrained by, the size, type, number, and character of the primary set. In essence, this set would be made up of the support functions implied in the selection of the primary set, e.g., attendant energy producing and transmitting facilities, water supplies and systems, sewers, solid waste disposal, and transportation networks. The level of output implied by each category of land use and support activity will be estimated using Task 2 as a base.

Existing knowledge is in general, adequate for defining the direct by-products of technical activities at their source. In other cases, however, where the activity or by-product is not "technical", e.g., those resulting from physical changes in topography - bulldozing landforms, dredging, etc., the nature and extent of the expected consequences must be estimated on the basis of informed scientific judgement.

The next step requires the establishment of a mechanism to determine the probable distribution of these by-products in space and time. This analysis will make maximum use of existing and applicable transport and diffusion models. Where these models do not exist, rough estimates are all that will be possible without a series of costly and wide ranging basic scientific studies.

Most diffusion and transport models do not adequately account for the alteration and/or transformation of the by-product, and, in some cases, the intermediate agent in the cause-effect chain is not known. These cases will be

identified as they occur during the course of the analysis and their relative uncertainty will be estimated.

Wherever possible, a series of maps will be generated to portray the probable spatial distribution and level of the direct by-products of the various land use activities, or the significant transformed by-products, where they can be identified.

This analysis will offer the planner an overview for determining various land use alternatives in those areas where the activity by-products are significant. It also represents a systematic and quantitative accounting procedure which can keep track of the cumulative effects of a number of widely dispersed individual sources. While the model can be ordered to specify designated numerical limits it will not explicitly specify the probable environmental damage resulting from the specific impacts of particular direct or transformed by-products on man, animals, plants, or materials. This latter aspect of the analysis will rely on specific scientific inputs which are not capable of simple computer analysis. The accumulation, storage, and retrieval of the data required to carry out and support this analysis constitutes the major problem which will be confronted through the use of computer techniques. The computer will serve two vital support functions. It will serve as a tool for treating large amounts of diverse data on a systematic basis, and it will permit a relatively fast initial analysis of the environmental implications of different mixes of land use activities (Task 4).

WORK PLAN

WORK ELEMENT 1

A. Objective

The objective is to adapt, refine and further develop Task 2 data for analysis.

Task 2 identifies residential areas, possible commercial and industrial uses, required environmental conditions, etc. for specific land uses and activities. It is necessary that these data be further developed and specified so that they are suitable for analysis. The land use scheme developed in Task 2 for example, will be refined in terms of specific uses and those activities required to support them. Probable industrial activities must be further described in terms of their SIC type and generalized technologies so that the probable levels of by-products can be estimated. Ways also must be found of ordering the relationships among the various information provided from Task 2 so that the relationships of activities to environmental constraints can be determined. Probable by-products and their safe or acceptable limits are identified in Task 2. These data must be combined with estimates of probable output to estimate environmental impact. Task 3 then must determine the probable quantitative loadings and their spatial and temporal distributions so that the environmental effects can be estimated. The significance criteria developed in Task 2 will be refined to include a valuation and ordering of by-products.

B. Methodology

Using the Task 2 data, systems analysts and planners will devise a land use classification scheme suitable for analysis. The probable outputs of residential, commercial and industrial land uses will be determined by engineers, scientists, economists, and planners. Maximum use will be made of published data, including research findings of the Environmental Studies Division of the U. S. Environmental Protection Agency, U. S. Dept. of Commerce publications (County

Business Patterns) and the Suffolk County Directory of Manufacturers by the Suffolk County Dept. of Commerce and Industry. Engineering specifications, handbooks, and industry studies will also be used where applicable. Best judgement criteria based on available scientific knowledge will be used in the valuation, ordering and selection of by-products. Explicit functional relationships between the levels of the various land use activities and resultant by-products can be formulated and examined to test their correspondence to real conditions.

C. Findings

Findings will include data suitable for use in the computer model developed in Work Element 2, and in subsequent analysis and estimates of by-product loadings.

D. Product

Input data suitable for computer analysis.

WORK ELEMENT 2

A. Objective

The objective is to design, validate, and refine a computer model which will store, order and selectively retrieve the input data. Tasks 2 and 3 will generate a large amount of specific numerical information. A method must be devised which can order this material in various types of classifications, combine various inputs to arrive at the quantification of the data input, and subject it to various mathematical manipulations. Moreover, it must be able to produce data in whatever form required.

B. Methodology

A data format which can input the data from Task 2 and Work Element 1 of this task will be developed. It is expected that the material

and data to be used in this model will require specific format treatment. It is necessary then, that these format requirements be established during the actual data collection process.

The simplest possible mechanism will be developed to assist in the analysis of data, especially in regard to the cost, complexity and probable run in of the computer program itself. Maximum use will be made of those existing computer programs which require the least modification and/or editing.

Validation of the model will be accomplished by means of trial runs using known information and known outcomes. The refinement of the computer model will be undertaken when validation indicates that it can produce results of significance to the planner.

C. Findings

A suitable model will be developed.

D. Product

A paper describing the model and its rationale will be produced.

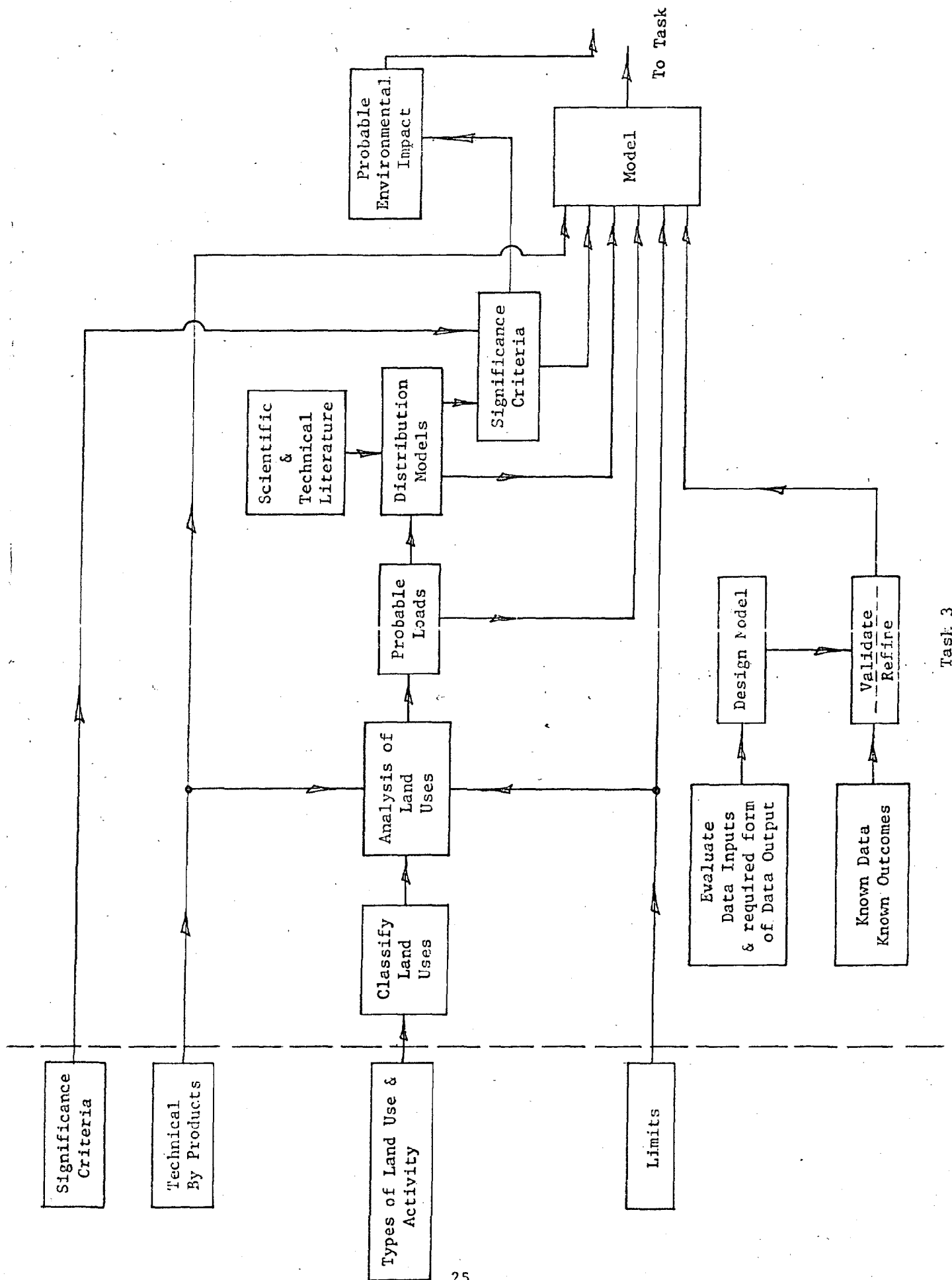
Instructions will be given for internal use in the data collection and analysis in Tasks 2 and 4.

FINAL PRODUCT

Summary report of cause-environmental condition-effect relationships, predictions and uncertainties for each functional area of the Plan.

Working paper describing interrelationships among Plan components and marine environmental impacts with quantitative substantiation and identification of unknowns and uncertainties where possible.

<u>Disciplines or Skills Required</u>	<u>Level of Effort (Man Days)</u>
Professional	
Administration	20
Comprehensive Planning	20
Economics (Modeling)	10
Engineering	25
Environmental Planning	40
Hydrology	15
Marine Science	20
Public Health	10
Systems Analysis	<u>120</u>
Total	280
Support Skills	
Clerical	25
Drafting (including map drafting)	15
Key Punch	5
Planning Aide	<u>10</u>
Total	55
Task 3 Total	335



Task 3

TASK 4

STATEMENT OF TASK

The Contractor shall identify functional and geographic areas in the Plan which could, by modification, be made more compatible with, or imply less damage to, the coastal zone. Emphasis shall be placed upon scientifically based environmental relationships rather than social or economic aspects. The Contractor shall identify alternatives in those parts of the Plan where significant coastal environmental impacts are likely, or where Plan objectives cannot be realized.

OBJECTIVE

The objective is to identify the particular land use alternatives which imply the least damage to the coastal zone of the Nassau-Suffolk region. It is probable that many alternative land use schemes can be identified. Some will imply greater damage to the coastal zone environment, some less. It is even possible that the Plan, as originally conceived may represent the least damage alternative, and there is no way for such an a priori identification to be made without a comparison of land use alternatives against each other. It may be that the least damaging alternatives require the commitment of all land uses to very low density. Thus, these alternatives must be subjected to a constraint dictated by the gross population assumptions in the Plan itself. Insofar as the Plan recognizes the de facto existence of committed land uses, this constraint cannot be disregarded and failure to include it will result in a mere analytical exercise.

KNOWLEDGE BASE

See Task 3 Knowledge Base.

RELATION OF THIS TASK TO OTHER TASKS

Using data and procedures developed in Tasks 2 and 3, this Task will

identify the feasible Plan alternatives that will serve as the basic input to the economic and political analysis of Task 5. Tasks 2, 3, and 4 are linked by their data demands, analytical processes, and outputs.

GENERAL METHODOLOGY

The model developed in Task 3 will be used to generate and order a large number of land use alternatives. A procedure will be developed which will permit the comparison of land use alternatives in terms of probable levels of environmental damage.

WORK PLAN

WORK ELEMENT 1

A. Objective

The objective is to identify environmental constraints in the coastal zone and key them to locations in Nassau and Suffolk Counties.

The Long Island coastal zone contains several types of existing environmental conditions which are unique and/or productive to the point where their protection and preservation is necessary for their continued existence. Included are fragile landforms such as barrier beaches, productive wetlands and estuaries, aquifers, etc. The Nassau-Suffolk region also has certain kinds of coastal zone areas whose physical or locational attributes imply hazardous conditions affecting land uses, for example, the eroding bluffs along Long Island's north shore and the tidal flood plains along the south shore. These conditions constitute major constraints on development and use.

B. Methodology

Environmental scientists and planners will identify environmentally sensitive areas in the coastal zone. Maximum use will be made of existing material and inventories developed by and for the NSRPB and

the Marine Resources Council, such as recent aerial photography of Long Island, The Marine Wetlands of Nassau and Suffolk Counties, New York - 1972, and previous work completed by various Federal and State agencies, and by the Long Island Sound Study. The nature, relative significance and magnitude of constraints on those environmentally sensitive areas in the coastal zone will be determined by environmental scientists and planners.

C. Findings

Environmentally sensitive areas, or areas with special natural resource significance, will be identified and mapped.

D. Product

A report identifying the above areas will be produced.

WORK ELEMENT 2

A. Objective

The objective is to identify the environmental loads produced by mixes of land uses and probable activities. Land uses and implied activities in the coastal zone will have environmental consequences which have been identified in Tasks 2 and 3. At this point, however, it is necessary to analyze the combined outputs of these land uses and activities. It is expected that when this part of the analysis is carried out, coastal zone land uses and activities which by themselves, imply no significant environmental impacts, may in combination, result in such impacts through adjacency effects, particular synergistic effects, or be violations of the environmental constraints identified in Work Element 1, Task 4.

B. Methodology

Land uses, activities, by-products, and probable loadings have been identified in Task 2. Task 3 generated loads by activity types. The model will be used to generate types of land use-

activity combinations and their accompanying by-product mixes.

Using the significance criteria developed in Task 2, the environmental implications of these combinations that violate environmental tolerance limits will be identified. The identification of these combinations of land uses and support activities will be generated in the model. Selection of those combinations which appear in the Plan will be done in the next work element.

C. Findings

Identification will be made of possible combinations of types of land uses and activities and the by-product mixes that they generate. Those combinations violating environmental tolerance limits established in Task 2 will be identified.

D. Product

A report detailing the above results will be produced.

WORK ELEMENT 3

A. Objective

The objective is to select those combinations of land uses and activities from the previous work element that actually appear in the Plan and to identify those combinations for which the development of alternatives will be necessary.

The preceding work element has identified many combinations of land uses, support activities, and probable by-product loadings. It then becomes necessary to select those land use combinations which are specified in the Plan. When this is accomplished, the probable gross by-product levels implied in the Plan will have been identified. This procedure will result in the identification of land use and activity combinations which imply significant public health and environmental effects in the coastal zone.

B. Methodology

Task 2 identified the land use-activity categories of the Plan.

Using map inspections and existing data, planners and environmental scientists will identify the land use combinations called for in the Plan and the probable environmental loads of these combinations. Those combinations of land use and probable activity levels which generate environmental loads that approach or exceed the safe or tolerable limits identified in Task 2 will be noted as subject to analysis in subsequent work elements.

C. Findings

The land use combinations actually appearing in the Plan will be identified along with their probable environmental loads. Those combinations which appear to threaten the environmental quality of the coastal environment will be identified.

D. Product

A report will be produced for internal use.

WORK ELEMENT 4

A. Objective

The objective is to identify the technically feasible alternatives to the support activities implied in the Plan.

Land uses implied in the Plan will require the existence of a number of support activities, e.g., wastewater treatment facilities, utilities, transportation networks, etc. It is possible that many of the problems identified in preceding work elements will be generated by, or be spillovers from, the land use implications of the total Plan. As these are identified, they will be subject to analysis. The technical requirements for these activities must be identified in terms of location requirements, probable scale and

applicable technologies. It is also necessary to determine the technically feasible alternatives for each type of activity. Thus, for example, in regard to sewage treatment, it is necessary to know the probable loadings, the technologies applicable to these loads, the locational requirements, and those modifications or alternatives which are technically feasible. Where significant environmental impacts resulting from technical by-products not generated by these technical support activities are identified, they will be subjected to the same kind of analysis. For example, environmental loads produced by industrial processes may result in major coastal zone damage.

B. Methodology

Engineers, environmental scientists and planners will determine the activities and scales required to support the land uses in the Plan. Use will be made of current engineering data in the various fields, e.g., wastewater disposal, power plants, water supply, etc. The same material will be used to identify alternative technologies. Where a particular industry is identified as producing unacceptable by-products, specific expertise relative to that industry will be consulted to determine feasible alternatives.

C. Findings

Technically feasible alternatives to current technology of support activities will be identified. Technical by-products of non-support activities that significantly affect the coastal environment of the Nassau-Suffolk region will be identified along with their technically feasible alternatives.

D. Product

A report identifying the above alternatives.

WORK ELEMENT 5

A. Objective

The objective is to identify the possible land use alternatives to the Plan subject to environmental constraints.

There are two land use implications which have to be addressed. The first concerns those land uses or land use combinations identified in the Plan which confront or violate environmental constraints identified in Task 4, e.g., housing on flood plains or barrier beaches. The second concerns the density and distribution of population and activities -- implied in the Plan, as they affect the service activities that result in environmental damage. The relevant scale for examining these impacts may be the whole or major parts of the Nassau-Suffolk region.

B. Methodology

Planners will map the areas in which constraints are indicated, and overlay these on the land use plan. They will identify those changes, either in terms of use, or level of use, which are compatible with environmental constraints. Reference will be made to model results to determine the implications of suggested alternatives. The preceding Work Element identified technologies and alternatives applicable to the major service-related activities implied in the Plan. An alternative to technology change is to influence service demand through changes in land use. The previous Work Element can identify the least damaging technology applicable to given service loads. By considering modifications of land use patterns it may be possible to identify a less damaging technology applicable to a changed service level. Planners, engineers and systems analysts will determine the relations between changed land

use patterns and their respective service requirements.

C. Findings

Land use changes compatible with environmental constraints will be identified.

D. Product

A report identifying land use changes compatible with environmental constraints.

WORK ELEMENT 6

A. Objective

The objective is to identify those alternatives to the Plan which imply more compatible or less damaging land uses in the Nassau-Suffolk region as they affect the coastal zone, subject to the overall framework and constraints of major Plan objectives, i.e., gross population and its distribution.

B. Methodology

The environmental implications of the Plan and its alternatives must be assessed in terms of relative environmental damage to the coastal zone. It is necessary to compare the probable environmental consequences of feasible alternatives, one against the other, and against the implications of the Plan itself. In this way, that alternative which satisfies the overall Plan objectives with minimal damage to the coastal zone will be identified. It is possible that several alternatives may imply equal damage. It is also possible that various alternatives are capable of meeting the gross objectives of the Plan. The problem then will be to select the alternative which best satisfies both Plan and environmental objectives.

B. Methodology

Task 2, 3 and 4 data will be analyzed to determine the environmental implications of the Plan and alternatives. The nature of the constraints (i.e. gross Plan objectives) will be identified by systems analysts and planners and formulated for analysis. The computer analysis will be used to run alternatives against each other and the Plan, and will generate sets of best fit alternatives.

C. Findings

Those land use alternatives most compatible with the overall objectives of the Plan and which imply minimal damage to the coastal zone will be identified.

D. Product

A report summarizing this analysis.

FINAL PRODUCT

Working paper describing significant environmental impacts and proposed alternatives that are workable changes to the Plan, including the rationale for alternative selection.

Discipline or Skills
Required

Level of Effort
(Man Days)

Professional

Administration	25
Comprehensive Planning	45
Economics (Modeling)	10
Engineering	60
Environmental Planning	60
Hydrology	40
Marine Science	70
Public Health	30
Systems Analysis	40

Total 380

Discipline or Skills
Required

Level of Effort
(Man Days)

Support Skills

Clerical
Drafting (including map drafting)
Planning Aide

75

35

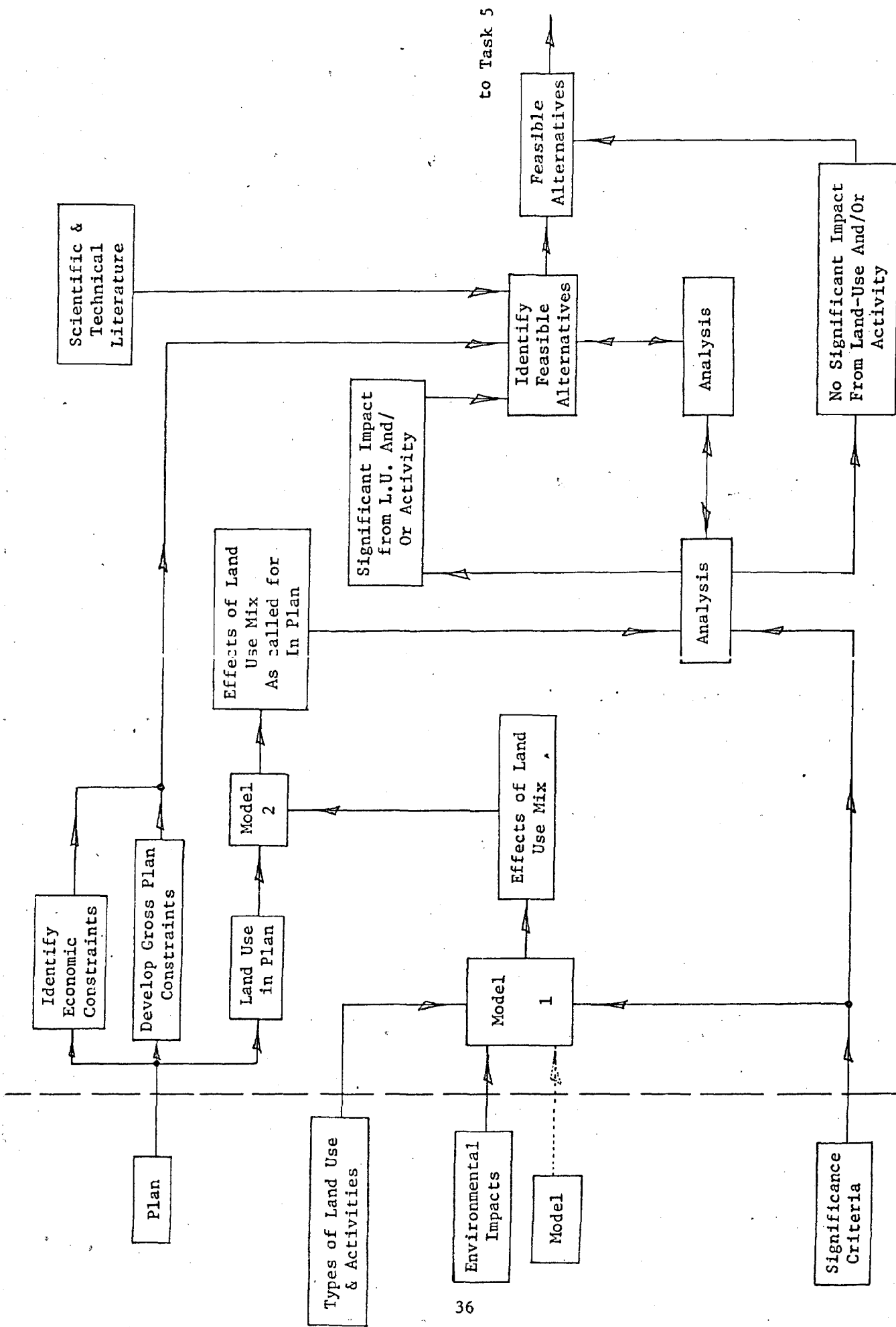
25

Total

135

Task 4 Total

515



Task 4

TASK 5

STATEMENT OF TASK

Evaluation of feasibility and desirability of alternatives from the viewpoint of economics, political realities and social acceptability.

OBJECTIVE

To evaluate those alternatives developed in Task 4 relating specifically to Long Island's Comprehensive Development Plan in respect to their economic merit and socio-political feasibility.

KNOWLEDGE BASE

The analysis of socio-political feasibility is less developed than the evaluation of economic merit, where techniques of cost benefit and cost-effectiveness analyses are well established. By contrast, the assessment of socio-political feasibility has generally been based on intuition and generalizations which result in a poor base for determining and implementing policy.

This task will combine economic techniques with those elements of other disciplines which have addressed the problem of socio-political feasibility. (Arnold J. Meltsner, "Political Feasibility and Policy Analysis", Public Administration Review, XXXII: 6 (Nov. - Dec., 1972), Bill Cavala and Aaron Wildavsky, "The Political Feasibility of Income by Right", Public Policy, XVII: 3 (1970), Kenneth J. Gergen, "Assessing the Leverage Points in the Process of Policy Formation", in The Study of Policy Formation (R. A. Bauer and K. J. Gergen, eds.; - N.Y.: Free Press, 1968), Yehezkel Dror, Policy Analysis: A Theoretic Framework and Some Basic Concepts, (Santa Monica: RAND, 1969); and Noel Boaden, Urban Policy Making (N.Y.: Cambridge Univ. Press., 1971).

The Nassau-Suffolk Regional Planning Board's experience places it in a good position to undertake this task. The Planning staff is the primary governmental agency on Long Island engaged in the analysis, interpretation and presentation of U. S. Census data. (NSRPB, U. S. Census '70, vols. 1-7, 1971-72). Moreover the analysis of Planning Programming Budgeting Systems, which involves economic evaluations of the type applicable to this task has been initiated. (Fred Rosenberg, PPB or Not to Be, N.Y. State Office of Planning Coordination, 1969, and Burton Weinstein and E. I. Friedland, Suffolk County Service Budget (mimeo), 1970). A further step in the analysis of Long Island's economy, especially relating to coastal problems, was undertaken by the Center for Environment and Man (F. A. Smith, L. Ortolano, R. M. Davis and R. O. Brush, Fourteen Selected Marine Resource Problems of Long Island, New York, CEM, 1970, and by the Oceanographic Committee of the NSRPB, (NSRPB, The Status and Potential of the Marine Environment).

RELATION OF THIS TASK TO OTHER TASKS

Task 4 provides the sets of technically feasible Plan alternatives and modifications for analysis.

This Task will generate preliminary input for Task 6 in the form of a brief description of probable types of Plan alternatives or modifications as well as subsequent input in the form of a representative sample of specific modifications. This task will produce a listing of those proposed Plan modifications that survive economic and political feasibility evaluations and will constitute the total package of alternatives from which selections will be made in Task 7.

GENERAL METHODOLOGY

Task 5 comprises three separate efforts: a general screening of Plan modifications to eliminate those which are prima facie infeasible, an economic evaluation to determine the economic merit and desirability of specific Plan modifications; and a procedure to evaluate the socio-political feasibility of those modifications which survive an economic evaluation.

The basic methodological techniques used in this task are:

1. Cost Benefit and Cost-Effectiveness Analyses:

These techniques have been developed to assist in the determination of the relative merit of alternative and often competing ways of accomplishing a specified end objective, especially in those cases where there is no effective set of market signals or where the action or objective is in terms of collective goods e.g. public roads, clean air, clean water, etc. Most often it is possible to estimate the costs of a particular activity or program and where the benefits derived from the activity or program cannot be specified, an analysis of the worth of the activity or program is possible only in terms of the least-cost way of accomplishing the objective. By introducing a benefit side to the analysis, it may be possible to identify programs where the least-cost solution is not appropriate. In many cases it is expected that the identification of benefits cannot be determined with precision. A rough qualitative analysis is often capable of policy determination that will escape a purely least-cost approach to the problem. Robert Dorfman, Measuring the Benefits of Government Investment, Washington, D. C., Brookings, 1965; Prest & Turvey, "Cost Benefit Analysis: A Survey", in Surveys of Economic Theory,

New York, St. Martins Press, 1966.

2. Aggregate Data Analysis:

This is a widely utilized and easily available methodological technique. With Nassau-Suffolk census summary tapes and packaged computer programs, demographic analysis can be performed using such standard statistical tests, as partial and multiple correlation and factor analysis. These procedures will permit the analysis of the political characteristics of selected geographical units as they influence specific policy orientations to environmental issues.

3. In-depth interviewing:

This is a method of gathering knowledge relating to the interactions among policy makers, their values and objectives. This information is essential to the analysis of political feasibility. (Dexter, Elite and Specialized Interviewing, Chicago, Northwestern University Press, 1968. This method of interviewing has been selected in preference to a sample survey of the general population because it is less expensive and generally produces more relevant indicators regarding political decision making.

WORK PLAN

WORK ELEMENT 1

A. Objective

The objective is to develop a procedure capable of reducing a large number of Plan modifications to more manageable proportions.

B. Methodology

Criteria will be established to determine prima facie infeasibility. Such criteria will be developed through consultation with planning staff, consultants, and members of the Regional

Marine Resources Council. Such criteria will include among others, the constitutionality, legality, and cost implications of suggested modifications.

C. Findings

1. Criteria for prima facie rejection of the Plan modifications and an identification of the specific modifications, those modifications that have been rejected.
2. Identifications of Plan modifications which will then be subjected to the evaluation procedures in the following work elements in Task 5.

D. Product

A brief report for internal use.

WORK ELEMENT 2

A. Objective:

The objective is to determine the relative merit of specific Plan alternatives. The economic analysis applicable to Task 5 will focus on the evaluation of technically feasible ways of accomplishing defined objectives. It is necessary to specify these objectives at a level of detail which recognizes the technical substitutability of activities and processes. For example, if the objective is to maintain a certain water standard, the resulting analysis may evaluate the relative merits of controlling wastewater effluent versus controlling dockside oil spillage. Although they further the objective of high water standards, their technologies and purposes are so diverse as to preclude a useful evaluation of one against the other. By ordering the probable large number of technically feasible alternatives in terms of the environmental conditions that they are designed to affect, the possibility of

such inappropriate evaluation will be reduced. It also permits the evaluation of alternatives to take place in a rough qualitative fashion if the data output of Task 2, 3, and 4 should prove incomplete. The Engineers will analyze feasible activity or process to identify alternative ways of achieving designated engineering objectives.

C. Findings:

The identified feasible alternatives classified according to technical substitutability.

D. Product:

Information for internal use in Task 5.

WORK ELEMENT 3

A. Objective:

The objective is to establish the applicability of various kinds of cost-benefit methodologies to coastal zone problems.

B. Methodology

It will be necessary to survey the economic literature to identify those cost-benefit models or analytical frameworks that may be applied to coastal zone related problems. Moreover, as it is probable that these models will have to deal with a poorly developed data base, it will be necessary to determine how the models described in the literature can be translated into a form which can permit a qualitative analysis.

C. Findings

Identification of those models applicable to the specific problems of an economic analysis of coastal zone activity.

D. Product

Technical paper comprising an annotated bibliography of relevant

existing economic literature, discussion of models and their general applicability to this analysis.

WORK ELEMENT 4

A. Objective

The objective is to reduce the large number of technically feasible plans and alternatives identified in Task 4.

The probable large number of technically feasible plans and Plan alternatives identified in Task 4 will be reduced to examples of the major types of Plan alternatives. This work element will serve a dual purpose. It maintains the evaluation task within manageable proportions and it permits the economic evaluation of major Plan alternatives to take place in a rough qualitative fashion should the data input from Tasks 2 through 4 prove incomplete.

B. Methodology

Feasible plan and objectives identified earlier will be ordered according to criteria such as technological purpose, frequency of occurrence, technique and Plan objectives.

C. Findings

Classification of large numbers of Plan alternatives according to common objectives.

D. Product

Information for internal use in Task 5.

WORK ELEMENT 5

A. Objective

The objective is to identify and evaluate the probable costs and benefits of technically feasible Plan alternatives. The identification and evaluation of the probable costs and benefits of technically feasible Plan alternatives constitutes the heart

of the economic evaluation task. In many cases it is expected that data will be incomplete to the point where the only analysis possible within the task's time constraint will be in rough qualitative fashion. In those cases where program benefits and/or costs cannot be identified with sufficient precision, the evaluation of alternatives will be in terms of the probable least-cost way of achieving a defined objective. There will be no attempt to equate the costs and benefits of general allocation problems (i.e. beach erosion vs. wetlands protection).

B. Methodology

Application of those cost-benefit frameworks suitable for specific analytical problems.

C. Findings

A determination of the degree of applicability of the cost-benefit framework to Plan alternatives.

D. Product

A summary technical paper detailing the type of analysis, rationale for choice, basis in literature, and results of each evaluation.

WORK ELEMENT 6

A. Objective

The objective is to determine socio-political feasibility on the basis of the character of the proposed plan amendments and the character of the affected persons or groups (constituencies).

B. Methodology

1. Identification of the significant aspects of the identified

Plan modifications according to the following criteria:

- a. Ostensible purpose of Plan modification
- b. Type of proposed land use or activity change.

1. Proposal involving commitment of shoreline frontage for recreation (high intensity use), conservation (low intensity use), industry, etc.
 2. Proposal involving change in physical characteristics of shoreline and nearshore marine areas: beach protection and erosion control works, dredging, bulkheading and filling, etc.
 3. Proposal involving change in physical, chemical or biological condition of the water resource: upgrading of wastewater treatment facilities; construction or relocation of outfall; impoundment of storm water; dredging of inlets or removal of obstructions to improve flushing; land treatment measures to reduce sedimentation.
- c. Extent of financial commitment involved
1. Cost of project or activity
 2. Financial resources available.
 3. Transferability and impact of costs, e.g. from taxpayer to user (revenue bonds), from consumer to shareholder -- and consumer (application of strict pollution controls to industry, etc.)
 4. Cost, to the extent quantifiable, of not undertaking project or activity, e.g. shellfish bed closures, loss of tourist trade, etc.
- d. Degree of similarity to previously accepted proposals.
2. Analysis of affected persons or groups (constituencies)
- a. Description of "constituencies"; i.e., identifiable groups or organizations whose response, whether favorable or unfavorable to coastal management alternatives,

may reasonably be expected to have a significant bearing on the implementation of the alternatives. Constituencies are classified into two categories; geographic and functional. Geographical constituencies are units of territorially bounded local governments such as villages, towns, cities and counties. Functional constituencies include such organizations as business firms, relevant federal and state agencies, industrial representatives, and citizen interest and pressure groups.

b. Geographical constituencies will be identified and classified on the basis of their responses to issues relevant to coastal zone management.

1. Towns will be classified on the basis of their responses to state initiatives for the establishment of Environmental Councils.

2. Municipalities which have purchased environmentally threatened areas will be distinguished from those which have not.

3. Village and town votes on environmentally related issues, such as environmental bond proposals, will be examined and geographical constituencies will be classified according to degree of support for such bond issue and referenda.

4. Interviews with governmental and non-governmental officials will be used to supplement and verify indicators developed in the three preceding steps.

c. Villages and towns once classified by the above procedures will then be analyzed to establish degree of correlation

between responses to relevant coast management issues and social and political characteristics, such as population density, growth, income, land use types, etc.

(This procedure will involve aggregate data analysis -- See section on Task 5 "General Methodology").

- d. Geographical constituencies showing pronounced positive or negative correlations will be selected for intensive study to establish causal connections, to explore the decision making processes in those constituencies and to assess probable reaction to specific coastal alternatives.
- e. Functional constituencies will be identified from documentary records (hearings, governmental reports, newspaper file analysis, etc.) and interviews with selected knowledgeable individuals. Further interviewing and documentary search will be utilized to obtain information regarding issue orientations, values, resources, and strategies of functional constituencies. This will be conducted partly in conjunction with the activity in paragraph d. (above).
- f. Interviews with representatives of geographical and functional constituencies.

C. Findings

1. Criteria for classifying Plan modifications to facilitate socio-political analysis.
2. Degree of relationship between demographic, social, and political characteristics of a sample of Long Island geographical units and actions on a series of relevant environmental

political issues.

3. Estimate of causal factors significant in determining relationships described in 2.
4. Identification of functional constituencies that can be expected to play a particularly important role in Long Island coastal zone management and in implementation of Plan alternatives.
5. Criteria for estimating feasibility of selected types of Plan alternatives according to relevant characteristics of geographical and functional constituencies.

D. Product

1. A report that explains the criteria for classification of Plan modification; shows the relationship between socio-political characteristics of selected geographical constituencies and their actions on environmentally related issues and identifies those geographical constituencies which may be expected to support or oppose specified types of Plan modifications.
2. A report identifying and analyzing the functional constituencies significant in Plan implementation and coastal zone management and assessing their reactions and their political and social resources in relation to selected Plan modifications.

FINAL PRODUCT

A working paper detailing the non-conflicting and potentially acceptable amendments or additions to the Plan.

Disciplines or Skills
Required

Level of Effort
(Man Days)

Professional

Administration	10
Comprehensive Planning	120
Computer Analysis	20
Economics	150
Engineering	30
Environmental Planning	10
Law	35
Political Science	110
Sociology	40
Welfare Economics	30

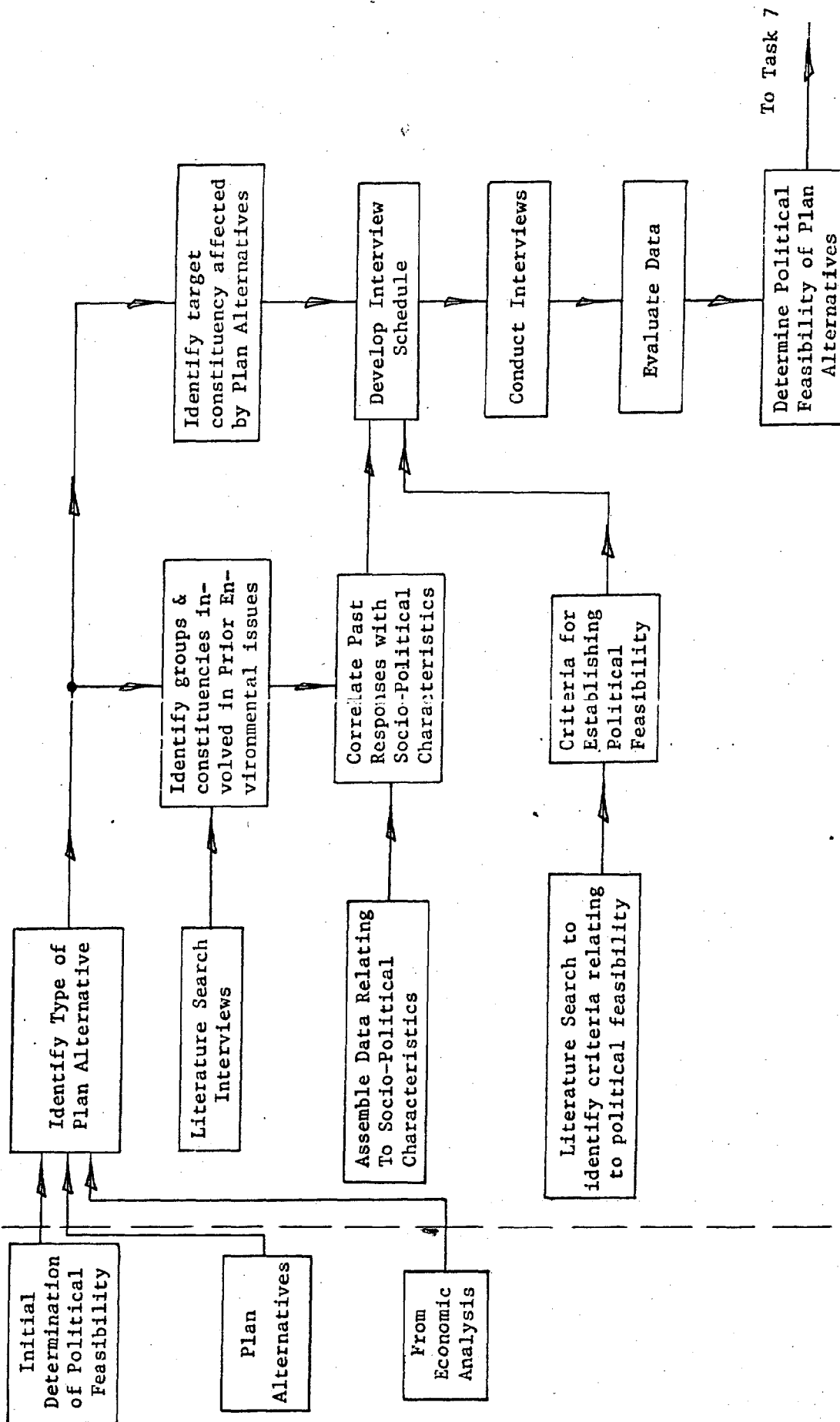
Total 555

Support Skills

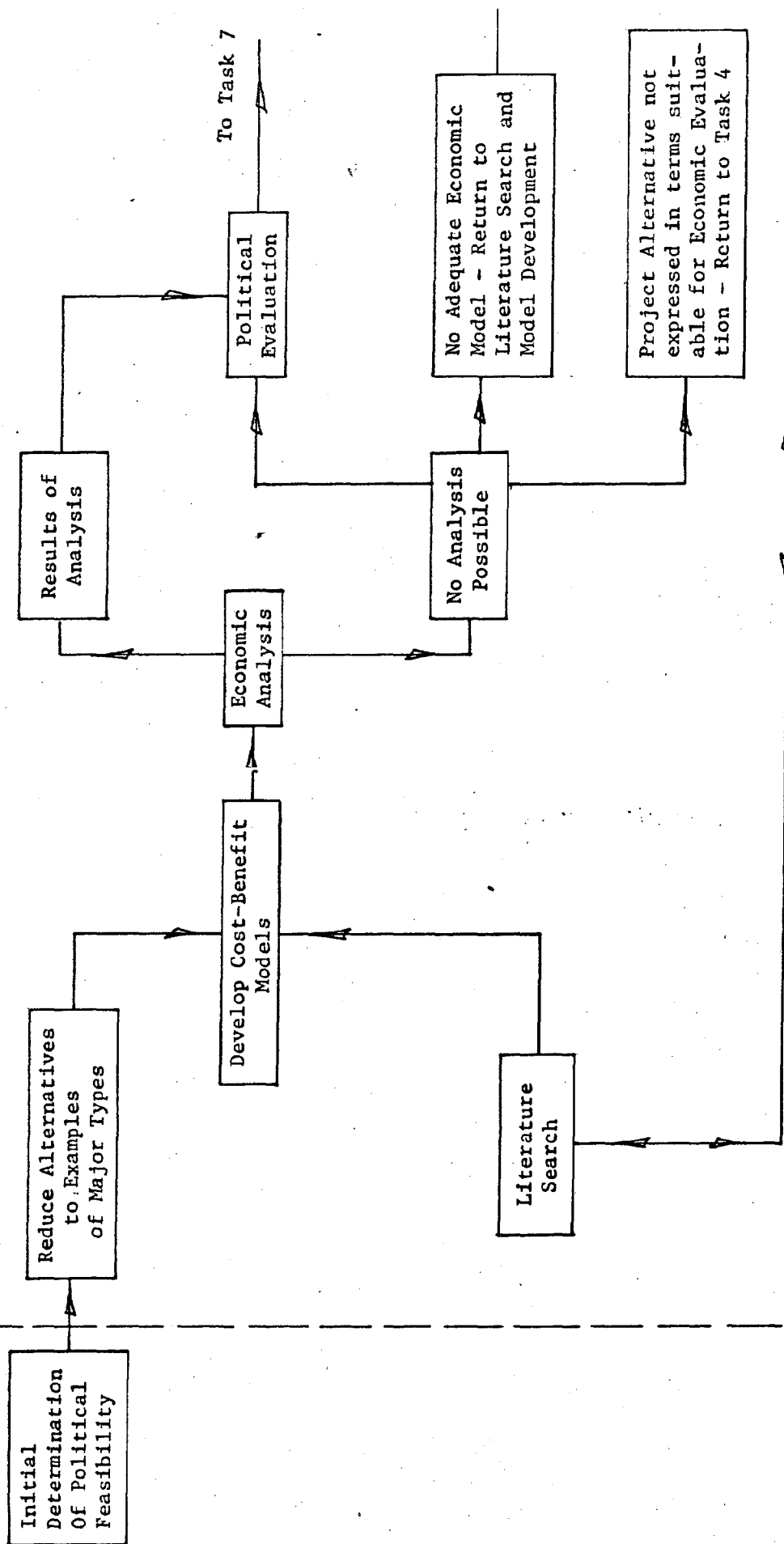
Clerical	175
Drafting (including map drafting)	20
Key Punch	5
Planning Aide	100

Total 300

Task 5 Total 855



Task 5 (Political Evaluation)



Task 5 (Economic Evaluation)

TASK 6

STATEMENT OF TASK

The contractor shall undertake a systematic and comprehensive inventory of the existing legal, administrative and institutional tools presently available for the implementation of types of Plan alternatives. He shall also indicate the needs for governmental action including the modification of regulatory structures as well as needs for public information, education and participation in the implementation and management process.

OBJECTIVES

- 1) To identify the types of governmental intervention required for the implementation of Plan alternatives, 2) to assess the legal and fiscal capability of existing institutions and structures in respect to Plan implementation, 3) to suggest appropriate institutional arrangements in the absence of an authorized agency, 4) to determine the need for public information, education, and participation to assure Plan implementation.

KNOWLEDGE BASE

Ever since the origin of the city planning movement in the United States, the weakest link in the planning process has been the inability to guide plans through the political processes of local and regional government and establish them within an effective administrative framework.

The planning literature includes a variety of explanations relating to the weakness of plan implementation: The frequent absence of planning expertise; the lack of solid scientific data supporting planners' recommendations; the absence of political support for the planner; and competition between administrative agencies. (Alan A. Altschuler, The City Planning Process: A

Political Analysis (Ithaca, New York; Cornell, 1965) and Fred Rosenberg, On Planning and Its Uses in Government (NSRPB, 1971). The recently awakened interest in environmental-human relations, with the consequent enactment of quality standards that are frequently difficult to enforce, has made the problem of planning implementation both more complex and more crucial. This is especially true in the case of the coastal zone where ownership is frequently uncertain and jurisdictional voids and overlaps exist. Moreover, there often seems to be no logical and consistent methods for developing, maintaining and implementing a planning effort. Research into these problems is just beginning. (B. H. Ketchum. The Water's Edge: Critical Problems of the Coastal Zone (Cambridge, Mass., MIT, 1972), J. C. Hite and J. M. Stepp (eds.), Coastal Zone Resource Management (N.Y.; Praeger, 1971), J. C. Hite and E. A. Laurent, Environmental Planning: an Economic Analysis (N. Y., Praeger, 1972). The research and practical experience of the Nassau-Suffolk Regional Planning Board, acquired during its intensive plan implementation efforts, will be utilized in this task. In addition NSRPB research undertaken on behalf of Nassau-Suffolk Comprehensive Health Planning (1972) identified all governmental and non-governmental agencies dealing with environment and health provides a base for a similar survey of coastal zone related agencies. The drafting and partial implementation of the Nassau-Suffolk Comprehensive Development Plan (adopted by planning agencies in both counties, the Suffolk County Legislature, and the State of New York, plus additional minor civil divisions), indicates sophistication in matter of plan implementation. Moreover, various published reports, either

sponsored or written and researched by the Planning Staff and its consultants, provide a ready resource of data and recommendations on coastal planning in Nassau-Suffolk. For example, D. S. Davies, E. W. Axelrod, J. S. O'Connor, Erosion of the North Shore of Long Island, SUNY Marine Sciences Research Center, Technical Report #18, contains recommendations for the implementation of a specific aspect of coastal management and supporting data. W. V. McGuinness, Jr., R. Pitchai, G. M. Northrop, Technology Transfer in the Marine Environment of Long Island, C.E.M. Report 4133-475, contains a description of the process by which the Marine Resource Council developed its coastal management guidelines and a preliminary inventory of federal and local agencies dealing with coastal management. Leonard Ortolaro, Quality Standards for the Coastal Waters of Long Island, New York, C.E.M 4047-408 (1970), contains data on statutory responsibility for establishing and maintaining coastal standards. R. M. Dowd, Dredging on Long Island, C.E.M. 4103-456 (1972), contains policy and planning guidelines and an assessment of the management implications for selected alternatives in dredging activities; Ralph Green, Wetlands on Long Island, C.E.M. 4103-460 (1972), assesses plan implementation mechanisms and procedures related to wetlands management. W. C. McGuinness, Jr., State of the Art for Selected Marine Resources Problems on Long Island. C.E.M. 4103-456 (1972), indicates coastal policy areas where research is needed to provide a better basis for policy formulation and implementation. NSRPB, Marine Resources Council, Guidelines for Long Island Coastal Management (in press) contains management guidelines and research priorities for Long Island.

RELATION OF THIS TASK TO OTHER TASKS

Much of Task 6 can be undertaken concurrently with other tasks and, in the initial phases, Task 6 is not dependent on input from earlier tasks. Some indication of the classes of alternatives under consideration in Tasks 4 and 5 should be made available no later than six months from project inception and preferably sooner. A representative sample of specific alternatives should be available within nine months after the project begins.

The recommendations regarding administrative mechanisms in Task 6 will contribute to the development of the criteria to be used in Task 7 for the selection of alternatives. In addition, this material will be utilized in Task 8 relating to the development of transferability criteria.

GENERAL METHODOLOGY

Literature search in legal and administrative documents in combination with established techniques of analysis in the fields of law, public administration, and political science will constitute the basic methodology used in this Task.

Interviews with selected governmental and non-governmental officials will be used to obtain detailed knowledge of important problem areas and to obtain the widest useful input to the Task work. Interviews will include, among others, members of those State and Federal agencies represented on the Regional Marine Resources Council.

WORK PLAN

WORK ELEMENT 1

A. Objective

The objective is to identify Federal, State and local (governmental and non-governmental) administrative jurisdictions and

their respective legal authorities for each of the categories established in the preceding Task.

B. Methodology

Analysis of legal and administrative documents to identify agencies, determine and specify their legal powers and individual and shared responsibilities, e.g., Federal-State functions in water quality in respect to the Long Island coastal zone.

Classification of probable major coastal zone alternatives into categories based on types of applicable implementation instruments (e.g., land use controls, tax policies, public acquisition, etc.)

Further documentary analysis and review of the above will relate classes of coastal alternatives to specific governmental units and specific powers of implementation. Assignment of implementation responsibilities for classes of alternatives to appropriate jurisdictions.

Identification of implementation agents and a specification of their respective jurisdictional powers applicable to those types of Plan alternatives deemed feasible in Task 5.

C. Findings

Assessment of the adequacy of existing governmental jurisdictions, powers, and administrative arrangements for the implementation of plan alternatives.

D. Product

A report containing the evaluation of existing mechanisms for the administration of Plan modifications and recommendations for new arrangements where necessary.

WORK ELEMENT 2

A. Objective

The objective is to review, analyze, and evaluate the role of public information and public education programs in the implementation of environmental plans in general, and coastal management plans in particular.

B. Methodology

Review of technical, legal, and administrative literature dealing with the role of public participation in securing governmental action to protect the environment.

Examples will be selected in which public participation appears to have been a major factor in securing governmental action.

The examples will be subjected to more detailed scrutiny after the literature search has begun.

Review of the role of public information efforts in the implementation of the Plan. Identification of private and public agencies which have cooperated in public information and education programs related to implementation of the Plan. Identification of useful techniques or strategies to enlist public support for plan proposals.

Assessment of the role of public information and education programs in the implementation of salient aspects of coastal zone management programs in light of the above research.

C. Findings

An identification of those factors determining the effectiveness of public participation in obtaining governmental action to protect the environment, especially in the coastal zone.

D. Product

A report that summarizes the role of public participation in obtaining governmental action to protect the environment with

recommended public participation strategies.

WORK ELEMENT 3

A. Objective

The objective is to devise new legal and administrative structures or modifications of existing ones wherever needed to permit the timely implementation of Plan modifications.

B. Methodology

1. Identification of those administrative and legal aspects of Plan modifications which are not adequately covered in existing legal and administrative arrangements (as determined in Work Element 1).
2. Literature search to identify laws and institutional devices currently employed in other parts of the U.S. for implementing planning and environmental quality recommendations.
3. Evaluation of effectiveness of the laws and institutional devices employed in other parts of the U. S. through literature review, correspondence, and telephone interviews with responsible officials.
4. Assessment of the suitability of the laws and institutional devices identified and evaluated in 2 and 3 and above, for implementation of some or all Nassau-Suffolk Plan modifications.

C. Findings

A list of legal and institutional measures or devices which have not been utilized in the Nassau-Suffolk Region but which might, in their existing or modified form, prove effective instruments for the implementation of Plan alternatives.

D. Product

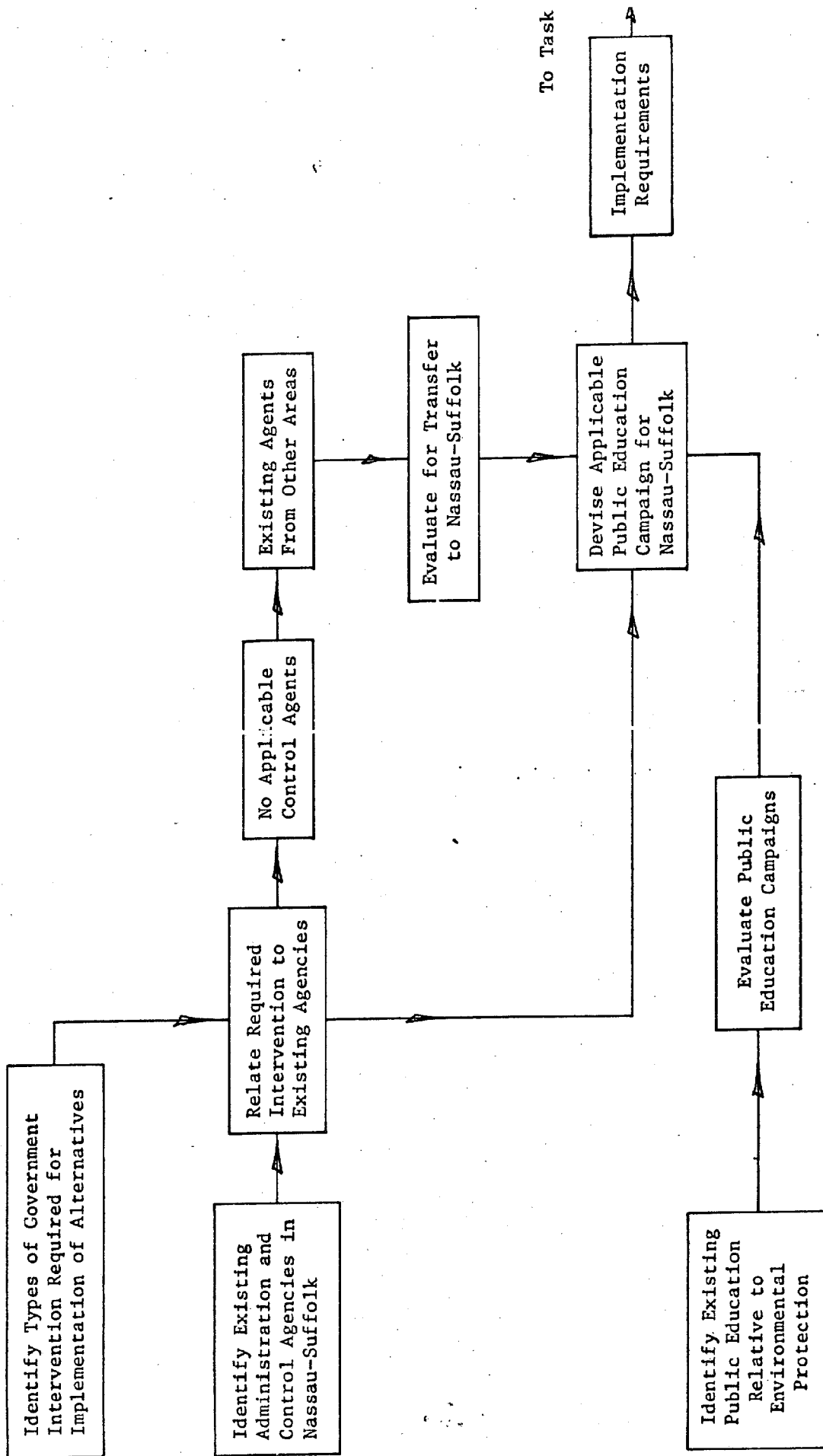
A report containing an annotated listing of new laws and innovative

administrative arrangements of possible value for Plan modification implementation in the Nassau-Suffolk Region.

FINAL PRODUCT

Working paper specifying recommended administrative organizations and mechanisms for implementation.

<u>Discipline or Skills Required</u>	<u>Level of Effort (Man Days)</u>
Professional	
Administration	30
Comprehensive Planning	110
Economics	10
Engineering	10
Environmental Planning	10
Law	45
Marine Science	10
Political Science (including Pub. Adm.)	100
Sociology	10
Total	335
Support Skills	
Clerical	125
Drafting (including map drafting)	20
Planning Aide	25
Total	170
Task 6 Total	505



Task 6

TASK 7

STATEMENT OF TASK

The contractor shall select from a range of previously identified alternatives a comprehensive and internally consistent set of Plan modifications, including additions and deletions.

OBJECTIVE

To develop and detail recommendations for Plan revisions that will further the goals of the Plan while preserving or enhancing the environmental quality of the coastal zone.

KNOWLEDGE BASE

Nassau-Suffolk is pioneering in its effort to relate regional planning and environmental science in a comprehensive and systematic manner. In the past, the scientific input to comprehensive planning has often been extremely uneven and generally limited to those sections of a plan where the planning staff possessed specific interest or expertise, or where a special problem (e.g. pervasive smog conditions, seismic activity, severe erosion, required the application of scientific knowledge. The original Plan emphasized environmental quality, but the incorporation of environmental knowledge was more often general and intuitive rather than precise and deliberate. The findings of the Marine Resources Council's predecessor, the Oceanographic Committee, are reflected in the plan while some of the current results of the council's research do not appear.

The research efforts of the Marine Resources Council cited in the previous tasks in addition to the seminars on wastewater, wetlands, and erosion, the Greeley and Hansen Water Supply Study (Nassau), and the Holzmacher Water Supply Study (Suffolk), sewer studies, solid

waste disposal studies, the Shoreham Nuclear Power Plant Hearings, the Port Jefferson Hearings on Dredging, and the literature searches undertaken in previous Tasks will contribute to the knowledge base which the Nassau-Suffolk staff and their scientific consultants can bring to bear on the selection and justification of Plan revisions and the estimation of the nature and extent of the changes that may be expected to result from their implementation.

RELATION OF THIS TASK TO OTHER TASKS

Task 7 requires inputs from Tasks 4,5 and 6. In order to assure completion in a timely manner, a preliminary or interim list of technically feasible Plan modifications identified in Task 4 and subject to economic and socio-political evaluation in Task 5 should be made available to Task 7 no later than October 1974. Subsequent additions to, or deletions from, the list should be immediately communicated to Task 7 staff by Task 4 and Task 5 leaders whenever changes are made.

It is anticipated that the Task 6 draft working paper and background materials will be available at the start of Task 7. Experience gained with the methodology in Task 7 is expected to produce guidelines for inclusion in the Handbook to be prepared in Task 9.

GENERAL METHODOLOGY

The approach is that generally employed in plan formulation namely the weighing of available alternatives and the selection of a series of recommendations that come closest to achieving previously identified goals. It involves analysis, synthesis, testing, a consideration of the required trade offs, the development of a final plan and a statement of its rationale.

WORK PLAN

WORK ELEMENT 1

A. Objective

To identify goals and objectives contained in the Plan, Coastal Zone Management legislation, and Marine Resources Council guidelines.

B. Methodology

Step 1 - Planners and political scientist will analyze the Plan and Coastal Zone Management legislation to identify goals and objectives by subject, e.g., housing, wetlands, time frame; and by probable beneficiary; e.g., the public, the shellfish industry, boat owners, etc.

Step 2 - Environmental scientists and planners will review guidelines and other findings of the Marine Resources Council and its consultants to identify environmental goals not expressly stated in the Plan or Coastal Zone Management legislation.

Step 3 - Planners will develop a matrix describing the Nassau-Suffolk goals and objectives that are the basis for Plan modification. It should show goal by subject, probable beneficiary, and time.

C. Findings

Heterogeneous collection of goals and objectives related to the needs of a variety of subjects and persons and often as diverse as the following examples:

- a) provide adequate housing for the economically disadvantaged;
- b) assure public access to beaches; and
- c) protect nesting areas to preserve the last remaining

ospreys on Long Island

D. Product

Matrix and explanatory text for inclusion in the final working paper.

WORK ELEMENT 2

A. Objective

To abstract from the total information concerning Plan alternatives those data items that will be of greatest assistance in the selection of Plan alternatives that eliminate or minimize environmental conflicts and at the same time maximize the achievement of Plan goals.

B. Methodology

Scientific and planning staff will classify the large number of alternatives received from Task 5 in terms of

- a) each functional element or subject of the plan;
- b) nature and locus of environmental condition affected;
- c) rough estimate of number of persons likely to be affected;
- and
- d) related economic, social, or political costs.

C. Findings

Sufficient data to permit subsequent ranking of alternatives.

D. Product

Statement for inclusion in working paper.

WORK ELEMENT 3

A. Objective

To develop a rating system that will permit the ordinal ranking of Plan modifications on the basis of their contribution to the elimination of environmental conflicts and the achievement of

Plan and/or Coastal Zone Management goals and to apply that system to the alternatives classified in Work Element 2.

B. Methodology

Step 1 - planners will devise an ordinal ranking scheme to indicate a positive, neutral, or negative contribution to the realization of planning and environmental goals.

Step 2 - environmental scientists and planners will apply this scheme to the Plan alternatives, ranking the latter in respect to the achievement of both immediate and long range goals.

C. Findings

A ranking scheme and lists showing the ordinal rank of Plan modifications, by function or subject.

D. Product

A statement describing the ranking scheme and its application.

WORK ELEMENT 4

A. Objective

To make a preliminary selection of Plan alternatives in those subject areas for which they have been developed.

B. Methodology

Step 1 - Planners and environmental scientists will choose one alternative from the top ranked alternatives in each subject area.

They will consider not only the ordinal rank of plan alternatives in terms of goals achievement but will weigh the economic and social trade-offs and the problems of implementation.

Step 2 - Planners and environmental scientists will indicate the rationale for their selections.

Step 3 - Planners will prepare a list of the selected alternatives.

C. Findings

A first-cut selection of plan alternatives and a documentation of the basis for the choices that were made.

D. Product

A preliminary mix of selected plan modifications and the rationale for their choice.

WORK ELEMENT 5

A. Objective

To evaluate the selected mix of Plan alternatives to identify potential environmental or planning (developmental) conflicts.

B. Methodology

Apply analytical techniques developed for Tasks 3 and 4.

C. Findings

Possible conflict or undesirable effects arising out of the combination of individually desirable alternatives.

D. Product

A description of the findings for inclusion in the working paper.

WORK ELEMENT 6

A. Objective

To improve the selected mix of Plan alternatives by replacing those that contribute to conflicts or other undesirable effects with the next best alternatives capable of meeting Plan, Coastal Zone Management and environmental objectives.

B. Methodology

Environmental scientists and planners will select substitute Plan alternatives to minimize potential conflicts or undesirable

- effects. They will consider the ranking of the alternative relative to Plan goals and their probable effectiveness in eliminating conflicts or undesirable effects.

C. Findings

A second cut(next best) selection of plan alternatives.

D. Product

A statement describing the revised set of plan alternatives, the changes that were made, and the reasons for the additions or deletions. To be included in the working paper.

WORK ELEMENT 7

A. Objective

To evaluate the selected mix of Plan alternatives to identify potential environmental or planning (developmental) conflicts.

B. Methodology

Apply analytical techniques developed for Tasks 3 and 4.

C. Findings

Plan alternatives with fewer potential conflicts or undesirable effects will be identified.

D. Product

Identification of remaining problems related to Plan -- alternatives mix. A statement for inclusion in working paper.

WORK ELEMENT 8

- Repetition of Work Element 6 and 7 until the mix of Plan alternatives appears likely to optimize plan goals and their environmental effects.

WORK ELEMENT 9

A. Objective

To propose implementation strategies for selected Plan alternatives.

B. Methodology

Planners, economists, environmental scientists, lawyers and political scientists will evaluate selected alternatives in respect to their political and economic implications.

Drawing on the information assembled in Tasks 2, 5, and 6, this staff will draft recommendations for the implementation of the selected plan alternatives. These recommendations may include, but would not be limited to, proposals for new legislation or new institutions, for changes in various activity levels for increased enforcement of existing environmental laws, or for a greater public role in some phases of environmental management. Documentation will include a comparison of existing and proposed implementation mechanisms.

C. Findings

A set of recommendations for the implementation of the selected alternatives.

D. Product

Discussion of implementation problems, strategies and techniques as they relate to the recommendations. To be included in work-paper.

WORK ELEMENT 10

A. Objective

To indicate where possible the changes that may be expected to result from the implementation of Plan alternatives.

B. Methodology

Task 7 team will attempt to estimate the probable changes to be expected from complete or partial implementation of the Plan alternatives.

Wherever possible, Task 7 team will indicate which of these changes are most essential to the achievement of environmental quality.

C. Findings

Probable results of Plan alternatives implementation and indication of those likely to have greatest impact on environmental quality.

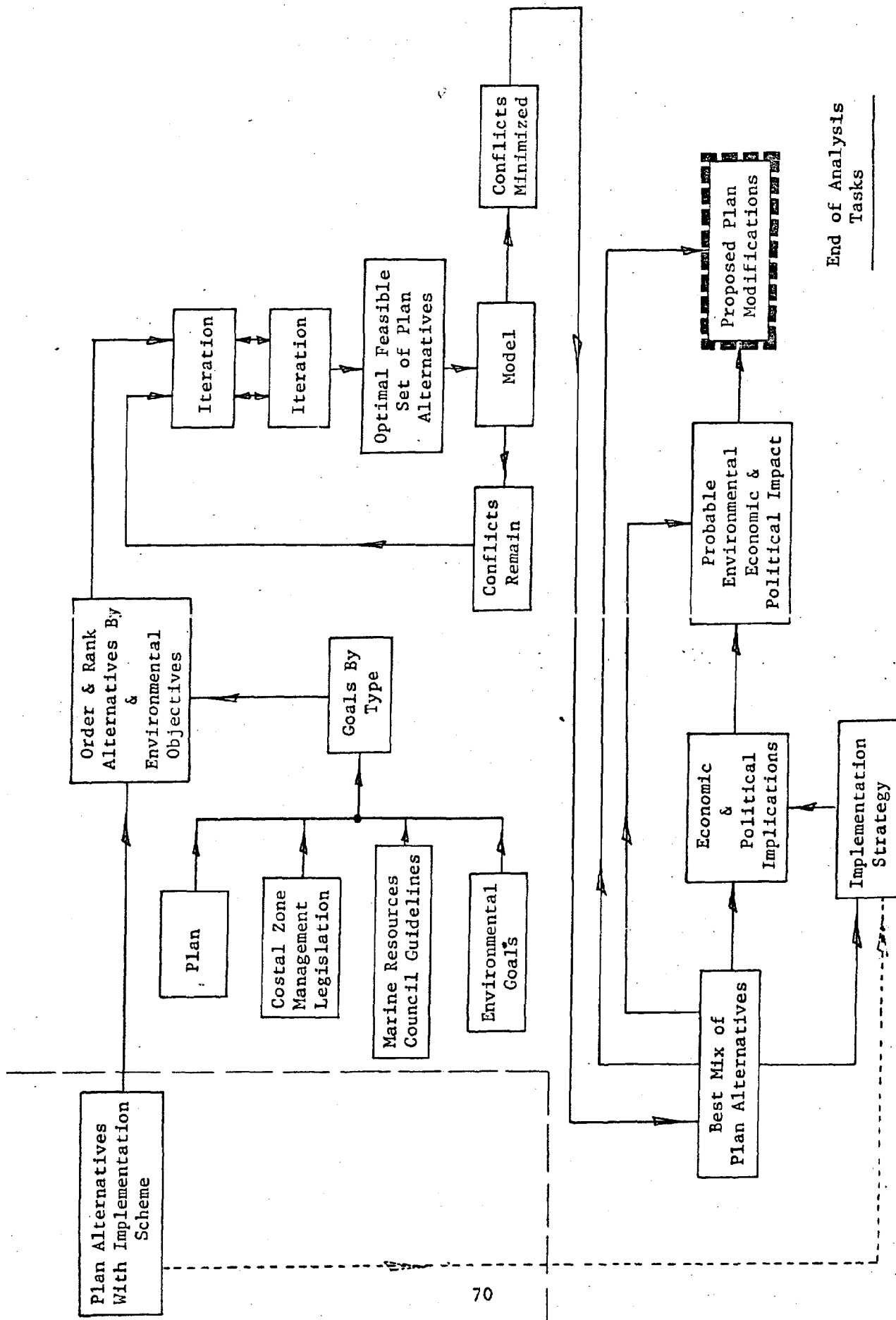
D. Product

A statement for inclusion in final working paper.

FINAL PRODUCT

Report detailing proposed changes to the Plan together with substantiating information with detail adequate to allow Planning Board action and incorporation into Plan.

<u>Disciplines or Skills Required</u>	<u>Level of Effort (Man Days)</u>
Professional	
Administration	20
Comprehensive Planning	50
Economics	15
Engineering	25
Environmental Planning	25
Law	10
Marine Science	40
Political Science (including Pub. Adm.)	15
Sociology	15
Total	215
Support Skills	
Clerical	100
Drafting (including map drafting)	95
Planning Aide	10
Total	205
Task 7 Total	420



Task 7

TASK 8

STATEMENT OF TASK

The Contractor shall assess the degree of transferability of the several components of the Nassau-Suffolk approach for use in the solution of similar problems in other geographic areas. This assessment shall include institutional as well as technical aspects of transferability and shall indicate those elements of the process for linking regional developmental planning and coastal zone management programs that have national, regional and local applicability.

OBJECTIVES

The objectives are 1) to determine insofar as possible whether the methodology or portions thereof used by the Nassau-Suffolk Regional Planning Board can be applied to the integration of marine environmental knowledge, comprehensive planning, and coastal management in other parts of the country, and 2) to evaluate the specific guidelines, standards, and recommendations, and suggestions for implementation in respect to their transferability.

KNOWLEDGE BASE

The literature of planning is replete with specific examples of how planners have dealt with components of plans (e.g., housing, airports, transportation, wetlands preservation, etc.). Relatively little has been done or documented dealing with the integration of marine environmental science and comprehensive planning. In this regard, Task 8 represents a pioneering effort, for which there is little, if any, precedent. In the course of performing Tasks 2-7, we expect to develop new insights into the problems of transferability which will be reflected in this and the succeeding task.

RELATION OF THIS TASK TO OTHER TASKS

The completion of this task is dependent upon each of Tasks 2-7. The earliest phase of the work can begin before the receipt of data from Tasks 2-7, i.e., review of available data descriptive of potential test areas. Subsequent phases of Task 8 will require interaction between Task 8 staff and the leaders responsible for Tasks 2-7.

GENERAL METHODOLOGY

In general, this task will require the assembly of readily available data relating to other coastal areas of the United States to permit the selection of a limited number of areas for testing transferability assessment techniques; the breaking out of the components of the Nassau-Suffolk methodology to permit assessment of transferability of individual components; and an assessment of the transferability of specific findings and institutional arrangements.

WORK PLAN

WORK ELEMENT 1

A. Objective

The objective is to select areas to be used for testing transferability.

B. Methodology

Tentative selection of areas for testing of transferability assessment methodology. Criteria to be used include geographic distribution, variations in population density and recent growth trends, coastal zone location.

Review of readily available data descriptive of some or all of the following characteristics of these areas: geography, geology and

soils, demography, economic base existing laws, institutions and the current status of planning and environmental control efforts. Information will be obtained from planning and environmental journals, for the U. S. Bureau of the Census, and other Federal and State agency publication, other relevant papers or texts; and materials gathered in Task 6.

Criteria for the final selection of geographic areas for testing transferability will include the extent and availability of data, and the range of physical, developmental, and institutional conditions as well as those criteria previously used in making the initial or tentative selections.

C. Findings

A selection of test areas, characterized by a variety of physical and developmental conditions.

D. Product

A brief report indicating the choice of geographic areas for transferability testing and the rationale for their selection.

WORK ELEMENT 2

A. Objective

The objective is to identify the methodological components of the Nassau-Suffolk Study and the conditions required for their replication.

B. Methodology

The methodology of the Nassau-Suffolk Study will be separated into its distinguishable components (e.g., model, economic analyses of institutional design for implementation, etc.)

For each identified component, the minimum staff, data, funding, and levels of expertise required to achieve replication will be

indicated.

Modification of the approach adopted in the Nassau-Suffolk Study will be suggested where the experience of the study team indicates that such modifications could increase the areas of applicability without seriously affecting the product.

C. Findings

Information required to permit local or regional agencies in other coastal areas to determine the feasibility of utilizing the Nassau-Suffolk approach in dealing with their own environmental and planning problems.

WORK ELEMENT 3

A. Objective

The objective is to assess the transferability of specific Nassau-Suffolk guidelines, standards and recommendations.

B. Methodology

For each of the guidelines, standards and recommendations, identify the specific physical, economic or other conditions, if any, that may be expected to affect transferability. Some of the guidelines such as "prohibit the disposal of dredge spoil or wetlands" are of general applicability and require no special conditions to insure their usefulness. Others, such as the injunction to keep all new structures at least 100' back from the edge of bluffs, are directly transferable only to those areas where the topography, soil characteristics, and hydrology are similar to those existing on Long Island.

Prepare a table listing the guidelines, standards, and recommendations and indicating wherever appropriate, the special conditions upon which they are based.

C. Findings

Indication of the physical or non-physical conditions that may constrain the transfer of specific guidelines, standards, and recommendations. An identification of those guidelines, standards, and recommendations that are of general applicability and for which there are no apparent constraints.

D. Product

Statement of work element findings and table for inclusion in Task 8 Working Paper.

WORK ELEMENT 4

A. Objective

The objective is to assess the transferability of specific legal and institutional arrangements.

B. Methodology

Review legal and institutional recommendations developed in Task 7 to identify those legal, administrative, fiscal or other conditions likely to affect transferability. For example, a recommendation for the imposition of local land use and activity controls designed to reduce undesirable environmental by-products, may require the enactment of enabling legislation at the state level. A recommendation for monitoring water quality and aquifer levels may require the existence of, or willingness to establish, an administrative agency capable of carrying out this function. A recommendation for local public acquisition of some or all remaining privately owned beach areas may require the availability of unused bonding capacity or grants-in-aid from a higher level of government. Design a table listing the legal or institutional recommendations and indicating wherever appropriate, the special legal, administra-

tive, or fiscal prerequisites for application in other areas.

C. Findings

Indication of those legal, administrative, and fiscal conditions which may affect the transfer of implementation recommendations.

Identification of those proposed legal and institutional arrangements, if any, for which no new legislation, administrative devices or changes in fiscal policies are required.

D. Product

Statement of work element findings and table for inclusion in Working Paper.

WORK ELEMENT 5

A. Objective

The objective is to test the transferability assessment procedure.

B. Methodology

Transferability assessment criteria described above will be applied to each of the areas selected in work element 1 to determine the range of transferability of these procedures.

Tentative assessment of the transferability of methodological components: specific guidelines, standards, and recommendations; and legal and institutional implementation proposals.

Participants in the Nassau-Suffolk study will confer with regional or state planning officials in the test areas to confirm the validity of the findings.

C. Findings

A determination of the strength and weakness of the transferability assessment developed in Work Elements 2, 3, and 4.

D. Product

A statement of findings to be included in final Task product.

WORK ELEMENT 6

A. Objective

To classify the methodological components, specific guidelines, standards, recommendations, legal and institutional proposals in terms of their national, regional, or local applicability.

B. Methodology

Development of consensus after discussion with study team, Marine Resources Council and Federal Project Advisory Committee. Documentation of assumptions and conclusions.

C. Findings

An evaluation of the transferability of separate elements of the Nassau-Suffolk work for use by federal, state, regional and local decision makers.

D. Product

A statement of findings to be included in final Working Paper.

FINAL PRODUCT

Working Paper assessing degree of transferability of the approach for dealing with comparable problems in other geographic areas and incorporating the findings of the work elements in this Task.

Disciplines or Skills Required

Level of Effort

Professional

Administration	40
Comprehensive Planning	100
Economics	10
Engineering	5
Environmental Planning	20
Law	40
Marine Science	10
Political Science (including Pub. Adm.)	10
Sociology	10

Total

245

Disciplines or Skills
Required

Level of Effort

Support Skills

Clerical
Planning Aide

125

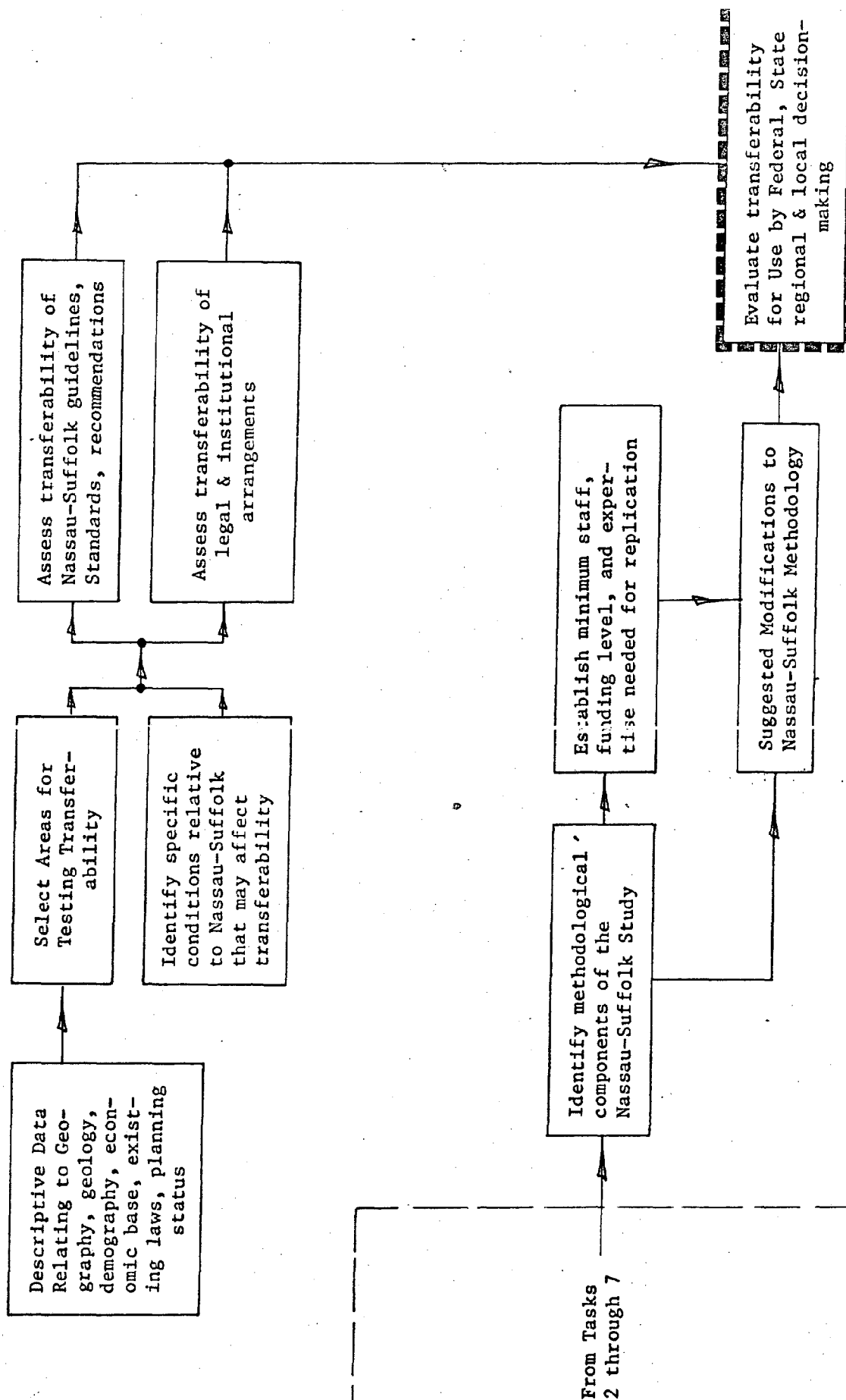
100

Total

225

Task 8 Total

470



Task: 8

TASK 9

STATEMENT OF TASK

The Contractor shall document the problem and approach developed to analyze and formulate suggested Plan alternatives, and conduct an evaluation of the process and final results. The Contractor shall prepare a series of guidelines and a step-by-step procedure to be followed by planning agencies in other coastal regions facing similar problems. The Contractor shall suggest modifications of the Nassau-Suffolk approach to facilitate general environmental evaluations, including environmental impact statements, by planners in non-coastal areas.

OBJECTIVE

To provide a documented summary of the entire Nassau-Suffolk project, and to describe those findings and methods dealing with the integration of environmental constraints with comprehensive planning, which are transferable to other parts of the country.

KNOWLEDGE BASE

The reports and working papers developed in Tasks 2 - 8, as well as the MRC report, Guidelines for Long Island Coastal Management, and proposed MRC work in formulating guidelines for the shellfish industry, and the prevention and clean-up of oil spills, will be used as examples of the approach used by Nassau-Suffolk to integrate coastal zone/environmental considerations into the comprehensive planning process. Completed research reports, such as the HUD Planning Guidance Report, Aircraft Noise Impact - Planning Guidelines for Local Agencies, and the San Francisco Bay Commission's findings, as well as research expected to be completed during the time frame of this project,

such as the U. S. Environmental Protection Agency research on Environmental Carrying Capacity as a Concept in Comprehensive Planning and A Study of the Relationship Between the Comprehensive Plan and the Environmental Impact Statement, and the Conservation Foundation's Coastal Zone Guidebook, will be used to provide a general assessment of the state of the art in environmental planning, and as a guide to the format for the presentation of Nassau-Suffolk findings in handbook form.

RELATION OF THIS TASK TO OTHER TASKS

Initial research involving this Task is not dependent upon the products, results or findings of Tasks 2 - 8. Assembly and examination of guidebooks and handbooks for the purposes of establishing a format for the presentation of the findings of the entire project will begin roughly 12 months after the start of Task 2. Those reports and working papers produced by Tasks 2 - 8 will be used in the preparation of a handbook (see Final Product).

GENERAL METHODOLOGY

The NSRPB staff and consultants with specific expertise will make a detailed examination of the Nassau-Suffolk approach in terms of the following:

1. the methodology, models, and procedures used;
2. the identification of knowledge and data gaps; and
3. the identification of important problem areas encountered.

The Nassau-Suffolk approach will be documented and discussed in relation to the work being conducted in coastal zone management by various groups in other parts of the country. Use will be made of handbooks, guidebooks, and current research efforts to ascertain the usefulness of the Nassau-Suffolk approach, and an appropriate format for transferring the Nassau-Suffolk planning technology to planning groups in other areas.

WORK PLAN

WORK ELEMENT 1

A. Objective

The objective is to document the results and approach of the Nassau-Suffolk experience dealing with the problem of integrating environmental science and comprehensive planning.

B. Methodology

The analysis and documentation of the Nassau-Suffolk approach will be performed by the following:

1. general problem discussion;
2. summary documentation of methodology employed and difficulties encountered;
3. identification of knowledge and data gaps that may impair usefulness of the approach;
4. assessment of the usefulness and replicability of the data and its format; and
5. summary of problems inherent in the integration of environmental concerns and comprehensive planning.

C. Findings

This Task will provide a complete documentation of the problem, the approach used to analyze and arrive at suggested alternatives, and a critique of the project and its results.

D. Product

A report in summary form which documents the Nassau-Suffolk approach to linking environmental planning with broad regional planning.

WORK ELEMENT 2

A. Objective

The objective is to prepare a Handbook which provides guidelines for the integration of comprehensive planning and coastal management.

B. Methodology

Existing handbooks will be assessed regarding content, form and substance. Applicable data will be culled for inclusion in the preparation of the Handbook. The problem of integrating comprehensive planning and environmental science will be summarized. A review of the standards, guidelines and findings generated by Tasks 2 - 8, and an assessment of the methodologies and procedures used to determine them, will be made. An appropriate presentation format for structuring those findings, methods and guidelines which are transferable to other parts of the country will be determined.

C. Findings

The format for transmitting the results and methods of the Nassau-Suffolk approach to planners and resource managers in other regions will be established.

D. Product

A report detailing the guidelines and step-by-step procedures to be followed by planning agencies that wish to merge comprehensive planning and coastal management considerations and/or reassess their plans and programs in the light of current environmental concerns. This report will also suggest possible modifications of the Nassau-Suffolk approach to facilitate general environmental evaluations, including impact statements by planners in non-coastal areas.

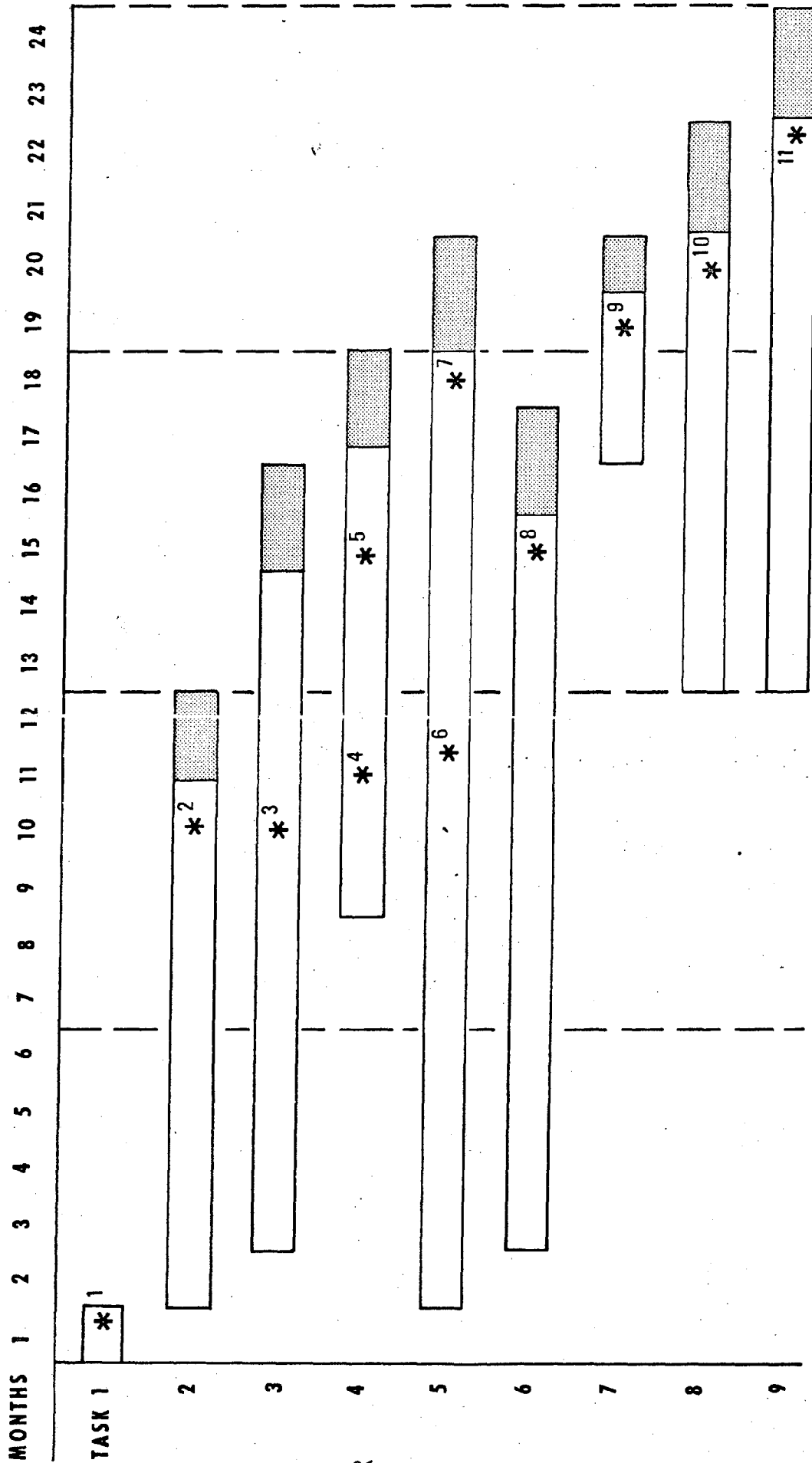
FINAL PRODUCT

A final report containing but not limited to the following items:

1. procedures and standards for use in integrating comprehensive land use planning and coastal zone management considerations;
2. detailed guidelines and a step-by-step procedure that can be followed by other planning agencies;
3. summary and complete documentation of the problem, analytical approach used to define and evaluate alternatives and an evaluation of the process and final results;
4. suggested modifications of the approach to facilitate general environmental evaluations, including the preparation of impact statements by planners in other regions.

<u>Disciplines or Skills Required</u>	<u>Level of Effort</u>
Professional	
Administration	25
Comprehensive Planning	75
Economics	10
Environmental Planning	50
Law	50
Political Science	10
Sociology	10
Total	230
Support Skills	
Clerical	200
Drafting (incl. map drafting)	100
Planning Aide	100
Total	400
Task 9 Total	630

PROJECT SCHEDULE



*¹ MILESTONE
 REVIEW OF FINAL PRODUCT

MILESTONES

In addition to the products derived from the work elements in the tasks, there will be several significant milestones by which the progress of the entire project may be judged. In some cases these milestones and work element products may be one and the same. In this project a milestone is defined as having two major characteristics:

1. the completion of a segment of work which marks the integration and utilization of data and analyses of previous work elements and tasks; and
2. the selection and/or direction for use of procedural or substantive results in subsequent work elements and tasks.

At this point, 11 such milestones have been identified for the project.

1. (Task 1.) Completion of the Work Program

Task 1 provides a detailed outline of work and effort organization, expected products, and required skills and resources. Approval of Task 1 by the Government Technical Representative allows the whole project to proceed.

2. (Task 2.) Establishment of Acceptable Environmental Limits

The establishment of acceptable environmental limits derived from analysis of the Plan, draws upon the earlier work analyzing the connections of land use - activities - by-product outputs, and utilizes scientific knowledge regarding tolerable levels of by-product emission into the environment. Similar knowledge regarding the effects of activities on the availability, shaping and distribution of resources also enters into the calculation of standards for setting environmental limits. When completed, this work can be fed as a significant datum into the

model design, acting as a screening element to separate acceptable from unacceptable combinations of land use - activity types.

3. (Task 3.) Validations of the Model

This is a checking of the model to see that it encompasses the required data and the operations that will allow aggregations of by-product and activity mixes resulting from various combinations of land use - activity types. This draws on the data inputs from Task 2 and is a critical point for all subsequent analysis dealing with the identification of technical alternatives and land use - activity modifications.

4. (Task 4.) Initial Plan Alternatives

This draws upon the model development of Task 3 in specifying those situations and areas for which alternatives are to be explored, and in consequent identification of such alternatives. Thus, this milestone becomes the crux upon which all future selection, exploration, and modifications of the Plan will be based.

5. (Task 4.) Selection of Technical Plan Alternatives

This milestone draws upon the previous one, and represents the screening of the alternatives in terms of environmental constraints and those limits arising from adherence to Plan goals and objectives. Those alternatives passing through this screening process are then submitted to further evaluations in subsequent Tasks.

6. (Task 5.) Initial Screening of Plan Alternatives for Political Feasibility

Those alternatives which have survived the evaluative screening in the previous task, will be submitted for a quick appraisal as to political feasibility. Those, which on a quick judgment basis seem politically impractical, will be dropped, thus further reducing the number of alternatives to be considered.

7. (Task 5.) Economic and Political Feasibility Evaluation of Plan Alternatives

Those alternatives surviving the quick initial screening indicated in the previous milestone, will be subjected to the economic, social and political feasibility analyses indicated in Task 5. The completion of these analyses indicating those alternatives which are feasible in terms of implementation requirements, marks another milestone in the project.

8. (Task 6.) Implementation Proposals in Regard to the Feasible Alternatives

The analysis of the problems attending implementation of the feasible alternatives, is another part of the work effort. The selection of an implementation program represents another milestone, and the underlying analyses of attendant problems will be useful in arriving at the final and recommended mix of Plan alternatives, policies and programs.

9. (Task 7.) The Mix of Plan Alternatives and Modifications - Final Selection

This represents the culmination towards which the whole project is aimed. It contains the final recommendations on technical alternatives, Plan and activity modifications, and policy and program recommendations deemed necessary to protect Long Island's coastal zone.

10. (Task 8.) The Transferability Report

The milestone here is identical with the final product of this Task, evaluating which elements of the project may be useful elsewhere.

11. (Task 9.) Project Handbook

Completion of the Project Handbook, documenting achievements, and problems in substance and method, and suggesting measures for improvement of effort in future projects of this kind, constitutes the final milestone.

SCHEDULE OF PRODUCTS AND REVIEWS *

<u>Task</u>	<u>Type of Product</u>	<u>Delivery Date</u>	<u>Provisions for Review</u>		<u>Comments</u>
			<u>Group, Person</u>	<u>or Agency</u>	
1.	a) First Draft Study Design	7/10/73	HUD	7/10/73-7/13/73	Approved study design will be presented to the Marine Resources Council, and the NSRPB, and will be available to the public on request. Informal briefing scheduled for first MRC meeting in September (9/10/73)
	b) Second Draft Study	7/24/73	HUD	7/24/73-	
	c) Final Study Design	7/31/73 (milestone 1)	---	7/27/73	
2.	a) Oral Report re Methodology for Task 2	9/24/73	MRC	9/24/73	Presentation will be designed to elicit constructive comment and to encourage active participation by qualified members of MRC.
	b) Oral Reports - Progress, Problems Preliminary findings.	monthly commencing 11/19/73	MRC	Open	Presentation will be designed to elicit constructive comment and to encourage active participation by qualified members of MRC.
	c) Draft Summary Report	4/15/74-5/15/74 (milestone 2)	HUD MRC	4 to 6 weeks	Communication with GTR (HUD & MRC during performance of work and report preparation should preclude need for other than minor revisions.
	d) Summary Report	6/30/74	--	--	Summary Report to HUD. To be presented to MRC, 7/8/74. Will be available to the public on request.

3.	a) Oral Report and Discussion re criteria for determining significance of environmental impacts	12/3/73	MRC	12/3/73	May request appointment of an ad hoc advisory committee
	b) Oral Progress Report re identification of inter-relationships	3/18/74 (milestone 3)	MRC	3/18/74	MRC meeting open to all interested persons
	c) Oral Report re design and capability of model	6/17/74	MRC	6/17/74	MRC meeting open to all interested persons
	d) Draft of working Paper	8/31/74	HUD	8/31/74	Communication with GTR. (HUD & MRC during performance of work and report preparation should preclude need for other than minor revisions.
	e) Working Paper	10/31/74	--	--	Working Paper to HUD to be presented to MRC 11/11/77 Copies to all persons or agencies designated by GTR. Available to the public on request.
4.	a) Oral Report re Methodology	2/4/74 (milestone 4)	MRC	2/4/74	Information session
	b) Oral Report re preliminary findings	9/23/74	MRC	9/23/74	Discussion and feed-back anticipated.
	c) Draft Working Paper	10/31/74	HUD MRC	10/31/74 11/30/74	Communication with GTR (HUD & MRC during performance of work and report preparation should preclude need for other than minor revisions.
	d) Working Paper	(milestone 5) 12/31/74	--	--	Working Paper to HUD To be presented to MRC

Copies to all persons and agencies designated by GTR. Available to public on request

5.	a) Oral Report re Scope and Methodology of Task 5	1/7/74	MRC	1/7/74	Presentation will be designed to elicit constructive comment and to encourage active participation by members of MRC.
	b) Oral Reports - Progress, Problems, Preliminary Findings	(milestone 6) monthly, commencing 3/4/74	MRC	open	Discussion and feedback anticipated.
	c) Draft Working Paper	12/31/74	HUD	12/31/74-	Communication with GTR (HUD) & MRC during performance of work and report preparation should preclude need for other than minor revisions.
	d) Working Paper	(milestone 7) 2/28/75	--	--	Working Paper to HUD. To be presented to MRC 3/4/75. Copies to all person or agencies designated by GT Available to public on request
6.	a) Oral report re Scope and Methodology	11/5/73	MRC	11/5/73	Presentation will be designed to elicit constructive comment and to encourage active participation by members of MRC.
	b) Progress Report or identification of Admin. agents & jurisdiction in CRM	4/1/74	MRC	4/1/74	Presentation will be designed to elicit constructive comment and to encourage active participation by members of MRC.

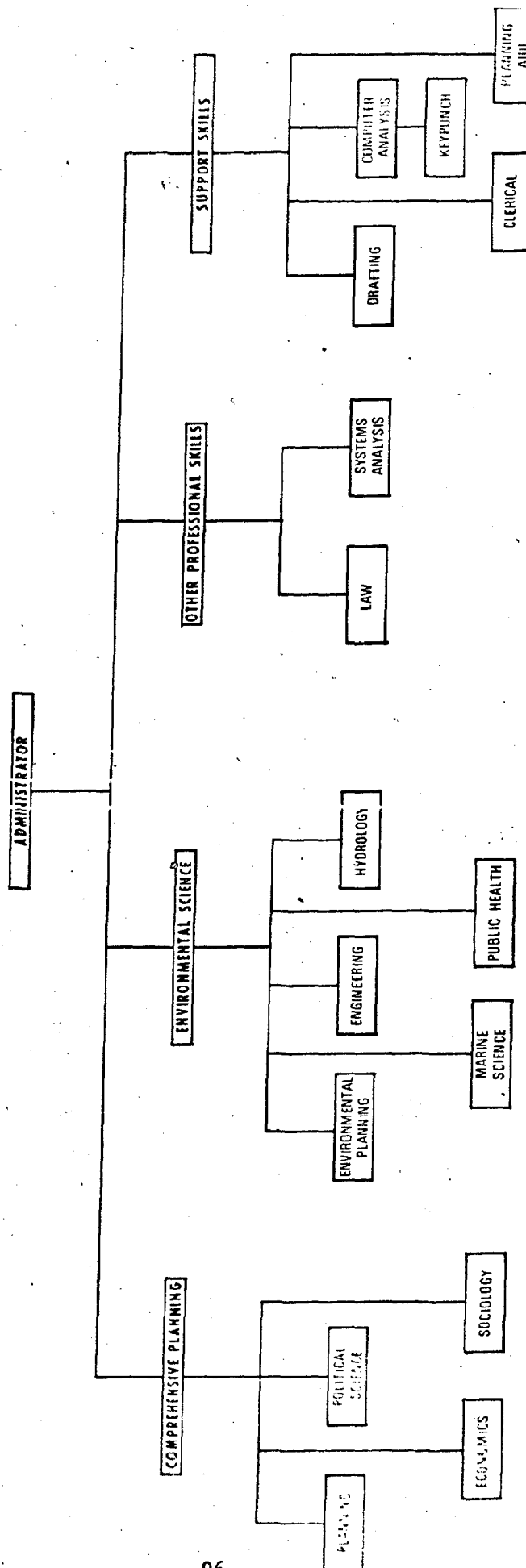
c) Seminar dealing with the role of in CRM	6/3/74	6/3/74	One day open meeting sponsored by NSRPB or MRC. Staff, state and local officials and academic community participation anticipated.
d) Oral presentation and memo in public education campaign and CRM	7/15/74	MRC	One day open meeting sponsored by NSRPB or MRC. Staff, state and local officials and academic community participation anticipated.
e) Draft Working Paper	9/30/74	HUD and MRC	Communication with GTR (HUD) and MRC during performance of work and report preparation should preclude need for other than minor revisions.
f) Working Paper	11/30/74 (milestone 8)	--	Working Paper to HUD. To be presented to MRC - 12/16/74. Copies to all persons or agencies designated by GTR. Available to the public on request.
7. a) Oral Report re Methodology and scope	10/21/74	MRC	Presentation will be designed to elicit constructive comment and to encourage active participation by qualified members of MRC.

b)	Oral Reports - (2) Progress, Problems Preliminary Findings	11/18/74	MRC	11/18/74	Presentation will be designed to elicit constructive comment and to encourage active participation by qualified members of MRC.
		12/16/74		12/16/74	Communication with GTR (HUD) and MRC during performance of work and report preparation should preclude need for other than minor revisions.
	c) Draft Working Paper	1/31/75	HUD MRC	1/31/75- 2/10/75	Working Paper to HUD. Presentation to MRC 3/17/75. Copies to all persons or agencies designated by GTR. Available to public on request. Presentation will be designed to elicit constructive comment and to encourage active participation by qualified members of MRC.
8.	d) Working Paper	(milestone 9) 2/28/75	--	--	Presentation will be designed to elicit constructive comment and to encourage active participation by qualified members of MRC.
	a) Oral Report on Methodology	7/1/74	MRC	7/1/74	Presentation will be designed to elicit constructive comment and to encourage active participation by qualified members of MRC.
	b) Oral Progress Report on General and Specific Transferability	12/16/74	MRC	12/11/74	Presentation will be designed to elicit constructive comment and to encourage active participation by qualified members of MRC.
	c) Oral Progress Report on Transferability Test Areas	1/21/75	MRC	1/21/75	Presentation will be designed to elicit constructive comment and to encourage active participation by qualified members of MRC.

d) Draft Working Paper	2/28/75	HUD MRC	Communication with GTR (HUD) & MRC during performance of work and report preparation should preclude need for other than minor revisions.
e) Working Paper	(milestone 10) 4/30/75	--	Working Paper to HUD, Presentation to MRC, 5/19/75 Copies to all persons or agencies designated by GTR. Available to the public on request.
9. a) Oral Report re purpose and format of Handbook	7/1/74	MRC	Discussion and feedback expected
b) Progress Report	12/1/74	MRC	Discussion and feedback expected.
c) Draft Final Report	4/30/75 (milestone 11)	HUD MRC	Communication with GTR (HUD) and MRC during performance of work and report preparation should preclude need for other than minor revisions.
d) Final Report	6/30/75	--	Final Report to HUD.

* Does not include regular briefings of the NSRPB, and of GTR, nor does it include meetings with Federal Project Advisory Committee, should such a committee be constituted.

FUNCTIONAL ORGANIZATION CHART



MANAGEMENT OF THE PROGRAM

To accomplish the objectives, administrative procedures must be designed for a variety of management tasks which are keyed to the large scope and complexity of this enterprise. The required management tasks concern:

1. Overall program direction;
2. Work direction and organization;
3. Consultant relations;
4. Review processes; and
5. Coordination processes.

Overall Program Direction

The Project Director will be responsible for directing the work through his chosen Task Leaders who will be responsible to him; for selecting consultants to the program, and establishing processes to review consultant work; for establishing review and coordination processes and designating appropriate personnel to carry out these functions; and for scheduling and directing the work elements in each task so that the relevant data and materials from each are available in sufficient time and proper sequence so that the work can proceed with minimum delay.

For the purposes of overall coordination and scheduling of this work, the Project Director will meet at least once each month with the Task Leaders, relevant consultants and others who may be involved, to discuss progress, problems that have arisen, next steps, and anticipated accomplishments for the following month.

Work Direction and Organization

Under the supervision of the Project Director, Task Leaders shall have responsibility for directing and assisting the flow of work. A major part of the Task Leader's responsibilities will center on receiving, interpreting and coordinating work from various disciplines and in providing for an interchange of information and working perspective among the professionally varied staff. To accomplish this, the Task Leader must provide an interpretive framework relating the work elements of the task to each other, indicating the linkages and dependencies of the tasks, and the ways in which the efforts of each may further the others. This effort of interdisciplinary coordination is paramount given the large variety of professional skills to be employed in this project, ranging from marine, biological and physical sciences, to computer systems analysis and economic analysis, to legal, sociological and political analyses, and planning.

The administrative means for accomplishing this coordinative function will be varied. One method given in task statements is that of requiring formation of a work element team consisting of professionals from different disciplines, in order to select and arrange data with relevance to needed analytical methods. Thus the interpretation of land use data in relation to probable by-product and activity patterns, and the expression and use of these in a systems model, will require the coordinated teamwork of various kinds of environmental scientists, systems analysts and planners. Another interdisciplinary coordination method will occur through regular meetings of Task Leaders with the Project Director. As need arises, Task Leaders may meet with staff and/or consultants to provide needed coordinative information, or the Leaders may call meetings of all persons engaged on various work elements in a task. In all of these, the Task Leader will take an

initiating role in facilitating and coordinating interdisciplinary exchanges. In addition to the above methods, Dr. Clarke Williams, Research Administrator of the MRC , will have a responsibility for coordinating the liaison between the planners and the engineers and the natural scientists during the progress of the project.

The Task Leaders also will have the responsibility for reviewing the work and scheduling of consultants' efforts; for scheduling and supervising the work of staff; for uncovering substantive and procedural problems in the work and taking measures to solve these consonant with the scope of the work and their authority; for bringing unresolved and significant problems to the attention of the Project Director so that he may take requisite action to allow work to proceed with minimum delay.

Consultant Relations

Consultants shall be hired by the Project Director. When a consultant functions as a Task Leader, his duties and responsibilities shall be the same as those of any other Task Leader. When a consultant does not function as a Task Leader, he shall report to the relevant Leader with regard to the scheduling, methods, content and progress of his work, and make himself available for coordinative consultation as necessary. The Project Director shall be consulted in those cases in which problems of procedure or substance cannot be solved with the resources of the Task Leader.

Review Processes

There will be a number of review processes and levels. Ongoing staff and consultant work will be subject to review at least once a month at the monthly meetings by the Project Director, Task Leaders, consultants and staff. As they become available, milestones and work element products will be subject

to similar review.

As milestones and work element products are judged to be satisfactory in this initial review, they will be passed on to the MRC for further comment and review. Each quarter of the year, in addition to these review efforts, the NSRPB shall be informed of the progress of the project and of the work immediately ahead.

Similarly, these materials will be forwarded to the Federal Advisory Committee for its review and comment.

Coordination

At the present time three other parallel agencies are concerned with similar or coincidental portions of the coastal zone of Long Island. They are the New England River Basins Commission with the responsibility for the development of a comprehensive plan for Long Island Sound; the Tri-State Regional Planning Commission which is trying to assemble planning data for the New Jersey, Connecticut and New York coastal zone; and the State of New York which will have responsibilities and functions under its new Coastal Zone Management Act of 1972. (These functions may be assigned to either the New York State Office of Planning Services or the Department of Environmental Conservation.)

The MRC and the NSRPB have a solidly established liaison with these three entities. The Project Director of this contract serves as a member of the Coordinating Group of the Long Island Sound Study being conducted by the New England River Basins Commission. A member of his staff serves as his representative to the Coordinating Group. The data and papers from this project will be made available to the New England River Basins Commission.

We have contributed towards the Nassau-Suffolk portions of the work of

the Tri-State Regional Planning Commission. Under the A-95 review procedure of the Federal Government, the NSRPB reviews all planning and capital construction proposals receiving Federal aid in this region which are forwarded through the Tri-State Commission. We receive the various studies of the Commission and send ours to it. The Tri-State Regional Planning Commission is a member of the MRC.

The NSRPB's Comprehensive Development Plan is part of the development plan published by the New York State Office of Planning Coordination (now Office of Planning Services). Representatives of the New York State Department of Environmental Conservation, Office of Planning Services and Department of Parks and Recreation serve as advisory members of the MRC.

The following Federal agencies also are represented on the MRC: Soil Conservation Service, U.S. Department of Agriculture; Plan Formulation Branch, North Atlantic Division, Corps of Army Engineers; Water Programs Grants, Environmental Protection Agency; Fire Island National Seashore, National Park Service, U.S. Department of the Interior; Operations Division, U.S. Army Engineers District, New York; Long Island Area Office, Division of River Basin Studies, U.S. Fish and Wildlife Service, U.S. Department of the Interior; Third Coast Guard District; U.S. Geological Survey, U.S. Department of the Interior.

PERSONNEL

Expertise Available

The members of the Nassau-Suffolk staff assigned to this project have had professional training and/or experience in the following fields: administration, architecture, comprehensive planning, demography, economics, earth sciences, environmental planning, landscape architecture, physics, political science, and sociology.

Need for Consulting Services

Consulting services will be required to provide expertise in the following disciplines or areas of specialization:

1. Computer Analysis - consultant capable of assisting systems analyst and others in development of model (Task 3) and in providing data processing services to social scientists in Task 5.
2. Engineering - consultant or consultants with experience in environmental matters, capable of assisting in the identification of by-products and assessing their environmental effects; the development of a model for describing spatial and temporal distribution of by-products; and the identification of technically feasible Plan alternatives regarding support activities.
3. Hydrology - consultant with knowledge of Long Island hydrologic conditions to assist engineer, systems analyst, marine scientist and others in respect to the effects of development and water use on Long Island's surface and groundwater resources.
4. Law - consulting attorney with specialization in environmental law to assist scientific personnel through identification of legally established environmental standards and to aid planning personnel

in the evaluation of laws, administrative mechanisms and institutional arrangements for the implementation of Plan alternatives.

5. Marine Science - consultant or consultants capable of assessing the environmental impacts of development projects. This would entail the ability to analyze cause-effect relationships involving marine ecosystems and to produce quantitative and qualitative evaluations of environmental data as they pertain to the selection of Plan modifications and alternatives.
6. Political science - consultant capable of assisting planning staff in the evaluation of socio-political feasibility of Plan alternatives and in the design of implementation strategies and recommendations.
7. Public Health - consultant capable of specifying minimal standards applicable to the coastal environment which should not be exceeded; identifying unacceptable public health situations created by environmental pollution; and identifying measurement criteria required for these functions.
8. Systems Analysis - consultants with expertise in the design of models and management information systems with applications relative to planning and management problems created by development changes in environmental and human conditions.
9. Welfare Economics - consultant capable of providing in-depth knowledge relating to application of cost-benefit analysis to empirical data; knowledge of model building and applicability of models and techniques from various applications (water resource development, defense, manpower planning); and skill in determining applicability of qualitative models.

ANNOTATED BIBLIOGRAPHY
REGIONAL MARINE RESOURCES COUNCIL PUBLICATIONS

Oceanographic Committee of the Nassau-Suffolk Regional Planning Board. The Status and Potential of the Marine Environment. Hauppauge, New York: Nassau-Suffolk Regional Planning Board, December 1966.

Report on the findings of the Committee on the marine resources of Long Island and their relations to industry, conservation, research and education; its recommendations on the formation of a Regional Marine Resources Council, with notes on sources of information on problems. Bibliography 100 items (91 pp).

Regional Marine Resources Council. Proceedings of the Conference on Shellfish Culture. Hauppauge, New York: Regional Marine Resources Council, 1971.

Papers on state of the art of shellfish culture, i.e., algae culture, molluscan embryology and physiology, culture methods - present and future, and techniques and problems in commercial shellfish farming. (106 pp).

Regional Marine Resources Council. Proceedings of the Seminar on Advanced Wastewater Treatment and Disposal. Hauppauge, New York: Regional Marine Resources Council in cooperation with U. S. Environmental Protection Agency and U. S. Geological Survey.

Papers on state of the art in wastewater treatment, groundwater management experiences and new projects for treatment and recharge. (167 pp).

Regional Marine Resources Council. Proceedings of the Wetlands Management Seminar. Hauppauge, New York: Regional Marine Resources Council in cooperation with the National Oceanic and Atmospheric Administration (in press).

Papers on the values of wetlands, both natural and managed, the state of the art for wetland management, present guidelines for wetland management - federal, state, and local levels, and research

needs for wetlands management (approx. 130 pp).

Regional Marine Resources Council. Proceedings of the Seminar on Dredging/
Dredge Spoil Disposal and Coast Stabilization/Protection. Hauppauge,
New York: Regional Marine Resources Council in cooperation with U. S.
Army Corps of Engineers (in press).

Papers on dredging technology, regulatory procedures, dredging and
spoil disposal activities on L. I., research activities, state of the
art on beach erosion and stabilization, notes on the National Shoreline
Study, and Federal beach erosion activities on L. I. (approx. 125 pp).

Regional Marine Resources Council. Guidelines for Long Island Coastal
Management. Hauppauge, New York: Regional Marine Resources Council,
a Committee of the Nassau-Suffolk Regional Planning Board (in press).

Suggested management guidelines or generalized procedures to be
followed in process of policy planning, decision and action at the
local level, representing the integration of scientific information
and local political, social, and economic realities in the four
areas of coast stabilization and protection, dredging and dredge
spoil disposal, integrated water supply and wastewater disposal,
and wetlands management. Bibliography 30 items (approx. 40 pp).

Regional Marine Resources Council Research Reports Funded by the Nassau
Suffolk Regional Planning Board

Hardy, Charles D. Hydrographic Data Report: Long Island Sound - 1970
Part II. Stony Brook, New York: Marine Sciences Research Center, State
University of New York, Technical Report Series No. 13, January 1972.

Data on single three day survey of L. I. Sound on salinity, tempera-
ture, dissolved oxygen and nutrients. Bibliography 4 items (20 pp).

Gross, M. Grant, et al. Characteristics and Environmental Quality of
Six North Shore Bays, Nassau and Suffolk Counties, New York. Stony
Brook, New York: Marine Sciences Research Center, State University of
New York, Technical Report Series No. 14, January 1972.

Describes physical characteristics, results of surveys of water

quality, sediments and waste deposits of six bays. Develops three environmental quality indicators (present, integrative and predictive), used to rate the six bays. Recommends further studies for better evaluation of bay environmental quality. Bibliography 109 items (98 pp).

Gross, M. Grant, et al. Survey of Water Quality and Sediments in Six North Shore Bays, Nassau and Suffolk Counties, Long Island, New York (Appendix to Technical Report No. 14). Stony Brook, New York: Marine Sciences Research Center, State University of New York, Technical Report Series No. 15, February 1972.

Describes sampling procedures, analytical techniques, data for water quality and sediment survey, with maps of the six bays showing location of sampling stations. Bibliography 6 items (29 pp).

O'Connor, Joel and Orville Terry. The Marine Wetlands of Nassau and Suffolk Counties, New York - 1972. Hauppauge, New York: Nassau-Suffolk Regional Planning Board, March 1972.

Inventories and classifies wetlands of Nassau-Suffolk Counties, estimates changes in acreage since 1964. Identifies locations (by maps), area, and physical and ecological functions of wetlands necessary for planning and management decisions, such as governmental acquisition, definition of zoning regulations and recreational development. Bibliography 58 items (99 pp).

Cok, Anthony E. and Leslie A. Sirken. Investigation of Surface and Subsurface Sedimentary Deposits in Offshore Environments of Southern Long Island. Garden City, New York: Adelphi University Institute of Marine Science, 1973.

Describes methods used and results of research on geomorphology, sedimentology and stratigraphy in surface and subsurface sediments in the near and offshore regions of southern Long Island - the Ridge and Swale topography. Bibliography 6 items (18 pp).

Hair, Malcolm E. and Stuart Buckner. An Assessment of the Water Quality Characteristics of Great South Bay and Contiguous Streams. Garden City, New York: Adelphi University Institute of Marine Science, 1973.

Describes procedures and results of bi-weekly measurements of salinity, temperature, dissolved oxygen, dissolved phosphorus, particulate phosphorus, nitrate, nitrite, ammonia, and chlorophyll at 39 stations in Great South Bay over a seven month period. Comparison with previously available data with estimate of stability of various areas of the bay. Bibliography 33 items (59 pp) plus three appendices containing raw data.

Davies, D. S., W. Axelrod and J. O'Connor. Erosion of the North Shore, Long Island, New York. Stony Brook, New York: Marine Sciences Research Center, State University of New York, Technical Report Series No. 18, July 1973.

Description of beaches and bluffs of north shore of Long Island, inventory of natural characteristics and man made structures, character and effects of dynamic beach processes catalogued with recommendations as to steps to take to minimize damage to persons and property. Maps show station locations and erosion and accretion rates. Bibliography 99 items (101 pp).

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